U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION VII

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WORK ASSIGNMENT NO. 846

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FINAL REPORT OF RCRA GROUNDWATER SAMPLING INSPECTION AT THE COLLIS, INC. FACILITY CLINTON, IOWA EPA I.D. NO. IAD047303771

PERFORMED AUGUST 10, 1988

BY

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DRAFT: AUGUST 24, 1988
FINAL: DECEMBER 7, 1988

ATTACHMENT 9

FINAL REPORT OF
RCRA GROUNDWATER SAMPLING INSPECTION
AT THE
COLLIS, INC. FACILITY

FINAL REPORT OF RCRA GROUNDWATER SAMPLING INSPECTION

COLLIS, INC. CLINTON, IOWA

INTRODUCTION

A RCRA Comprehensive Groundwater Monitoring Evaluation (CME) Quality Assurance/Quality Control Field Audit (QA/QC audit) was performed by Jacobs Engineering Group Inc. (Jacobs) under TES IV Work Assignment No. 846 at the Collis, Inc. facility (EPA I.D. No. IAD047303771) in Clinton, Iowa on August 10, 1988. The QA/QC audit is a groundwater sampling inspection performed as a portion of the CME. The sampling inspection provides the means by which EPA evaluates whether or not sample collection and handling procedures employed by the facility will provide data that are representative of in situ groundwater quality. The inspection was conducted as a means of evaluating the groundwater monitoring procedures employed by the facility to meet the requirements of 40 CFR, Part 265, Subpart F. This narrative report and attachments present the results of the inspection.

The Technical Assessment (TA) portion of the CME was completed and submitted to the U.S. EPA Region VII on December 7, 1988. The TA incorporates the results of the groundwater sampling inspection by reference.

PARTICIPANTS

Collis, Inc.:

Douglas Smith	Plant Engineer
Ron Street	Plating Engineer

Warzyn Engineering: (Consultant to Chamberlain Mfr. Corp./Collis, Inc.)

Bill Backus	Field Specialist

Jacobs Engineering Group:

Valda Terauds	Hydrologist - Work Assignment Manager and Field Team Leader
DeLaine Fletcher	Geologist
Larry Phyfe	Geologist

FACILITY DESCRIPTION

The Collis, Inc. facility is located at 2005 South 19th Street in Clinton, Iowa. The facility employs over 300 people and operates three shifts per day, five to six days per week. The plant is bounded to the north by Manufacturers Ditch; on the west by South 19th Street beyond which are cultivated lands; on the south by an alley adjacent to a residential development; and on the east by a golf course (see Figure 1). The city of Clinton (population 35,000) lies to the northeast within a 3-mile radius of the site.

Collis Inc. manufactures steel refrigerator shelving from rolled steel and wire stock. Steel components are welded, cleaned, and zinc plated or powder coated and then lacquer coated prior to packaging and shipping. A molten choline salt (corrosive) bath is used to strip parts which do not meet specifications.

Zinc plating process operations include caustic cleaning (by soaking or electric methods), acid pickling, zinc chloride electroplating, and a water rinse. The electroplating wastewaters and sludges are routed to the onsite wastewater treatment plant where hexavalent chromium is reduced to trivalent, fluoride is removed, pH is adjusted, and solids are removed. Treated effluent is discharged to Manufacturers Ditch under NPDES Permit No. IA0000752. Treated sludges are dewatered by a filter press; filter materials (which have been tested and are not hazardous) are disposed of at the local sanitary landfill.

From 1971 to 1979 five surface impoundments received wastewater treatment sludges and cyanide plating bath sludges. Cyanide plating operations were discontinued by the facility in 1985. Sludge materials were hazardous due to the presence of cyanide, chromium, zinc, and high pH. In 1982, the Superfund division of EPA requested that Collis install groundwater monitoring wells to determine if groundwater underlying the impoundments was contaminated. Analytical data from the sampling of two of these wells (MW-2 and MW-5) have been submitted to the EPA on a quarterly basis; however the location of MW-2 (cross-gradient) and the high concentrations of TOX in background well MW-5 indicated that additional wells should be installed at locations more suited to monitoring the potential impacts of the surface impoundments. Thirteen wells were installed by consultants during a hydrogeologic assessment of the Collis facility. Of these wells, only one (MW-13) was suitable for subsequent use as a RCRA monitoring well based on location and well construction criteria.

Collis is an interim status Treatment/Storage/Disposal facility (due to the sludges stored in the impoundments) and has submitted a Part A Permit Application to EPA. Rather than submit a RCRA Part B Permit Application to obtain a permit to operate the surface impoundments to the EPA, Collis elected to close the waste management units. Following EPA approval of Closure and Post-Closure Plans submitted by the facility, closure activities (sludge excavation and disposal followed by confirmatory sampling of residuals) were initiated in early 1987. A RCRA groundwater monitoring network was installed in 1988 in accordance with the Post-Closure Plan. This network includes four monitoring wells: three downgradient wells (MW-13, -20, and -21) and a single upgradient well (MW-22) (Figure 2). Post-

Closure activities yet to be completed include pumping and disposal of water impounded in the three lagoons (which remain following 1987 closure activities), backfilling, re-grading, and revegetation. The CME QA/QC audit was scheduled to coincide with the facility's semi-annual sampling event.

INSPECTION PROCEDURE

Upon arriving at Collis on the morning of August 10, 1988, DeLaine Fletcher, Larry Phyfe and Valda Terauds of Jacobs contacted the Collis facility representative Mr. Douglas Smith and presented our credentials. Ron Street of Collis, Inc. and Bill Backus of Warzyn Engineering were also in attendance at the initial conference. The purpose and procedures of the QA/QC audit were explained, comments concerning the facility's sampling plan were discussed, and further information on the construction details of the RCRA monitoring wells and an onsite deep well was requested. A copy of the facility's sampling and analysis plan and Jacobs' review comments are provided in Attachment A. Facility procedures for site access and photographs were also discussed. The inspection activities consisted of a general site evaluation, pre-sampling activities, sampling activities, and an exit conference. Supporting documentation generated during the inspection is provided in Attachment B - Photographs, Attachment C - Inspection Checklist, and Attachment D - Field Logbooks. Tables are used to summarize field observations and measurements in a convenient form.

Sampling by the facility was curtailed at 5:00 p.m. due to low well productivity, the unanticipated volume requirements for split sampling, and a lack of commitment on the part of the consultant due to budgeted time and dollar constraints. The facility failed to satisfy the basic requirements of their RCRA monitoring program as they did not obtain the requisite samples from background well MW-22. An exit conference was held at 5:00 p.m. to explain procedural deficiencies observed during the day's sampling event and to make arrangements to obtain copies of field notes, chain of custody sheets, and analytical results.

In the interests of obtaining a complete data set, Jacobs elected to continue sampling from MW-21 and -22. In the consultant's absence, Jacobs personnel continued sampling until 7:00 a.m. on August 11th. Mr. Douglas Smith was contacted at this time and presented with a receipt for samples and a copy of our chain of custody record to conclude the QA/QC audit.

FINDINGS AND OBSERVATIONS

General Site Evaluation

The general site evaluation was conducted by Valda Terauds of Jacobs and Mr. Douglas Smith of Collis. (The general site evaluation was performed concurrently with pre-sampling activities.) Areas examined during the general site evaluation included two drum storage areas, a choline recycling area, above ground storage tanks containing spent acids and cleaners, and the onsite wastewater treatment plant.

The first drum storage area was located within the facility's shipping and receiving area and contained drums of waste oil, cleaning chemicals, electroplating solutions, choline salt (corrosive), and paint lacquer. Drums were not always on pallets and there were indications of spillage on the floor (white crystalline powder, possibly choline salt). Photographs obtained during the general site evaluation are presented in Attachment B. Several lacquer drums were stored within the lacquer bath room in the process area.

The second drum storage area was located near the choline recycling area. Electroplating solutions, choline salts, paint lacquers, and drums of unknown contents were stored here. (Mr. Smith indicated efforts would be made to identify the constituents within the drums and arrange for proper disposal once identified.) Generally the drums were not resting on pallets; the drums of unknowns had been at the facility for several years and were observed to be in poor condition; and the area was untidy (choline salt-encrusted molds were sitting between drums). The choline recycling area consisted of a neutralization bath (pH 8 to 9), collection sumps, a sulfate reduction process, and a second collection sump. Wastewaters from the recycling area are piped directly to the settling pond of the onsite wastewater treatment plant.

Above ground storage tanks containing spent acids and cleaning solvents are located just outside of the choline recycling area. The tanks rest on a concrete pad approximately 5 feet above ground surface and appeared to be in fair condition. The facility also operates two above ground storage tanks for the storage of nitric and hydrochloric acids.

The onsite wastewater treatment plant consists of a concrete settling basin (28 feet deep with a 200,000 gallon capacity) which receives process wastewaters. Wastewaters are filtered through diatomaceous earth; spent filter materials are dewatered in a filter press and the filter cake, which is non-hazardous (based on testing for RCRA hazardous characteristics), is hauled to the local sanitary landfill. The treated effluent is discharged to the NPDES outfall at Manufacturers Ditch (NPDES Permit No. IA0000752), which flows into Mill Creek, a tributary to the Mississippi River. Samples of treated effluent are obtained at three points, the settling tank, the filter effluent, and at the NPDES outfall three times per day for analysis in the onsite laboratory.

Following surface impoundment closure activities, the location of the five former surface impoundments is currently expressed as three water-filled lagoons. According to Collis, the water present in the lagoons is the result of groundwater seepage and rainfall. Soils immediately above the water level along the lagoon dike sideslopes in all three lagoons were colored dark gray to black, possibly the result of staining and the presence of oil or grease. Surface waters in the northern lagoon had a blue-green algal bloom in the west end. Surface waters in the southeast and southwest lagoons had red-orange staining and oil and grease floating on the water surface. The facility is currently waiting for permission from the EPA and the city of Clinton to pump the impounded water to the sanitary sewer and proceed with remaining Closure and Post-Closure activities.

Pre-Sampling Activities

In conjunction with the general site evaluation, pre-sampling activities performed by Bill Backus of Warzyn were observed by DeLaine Fletcher and Larry Phyfe of Jacobs. The four RCRA monitoring wells (MW-13, -20, -21, and -22) were identified, locations of these wells with respect to the facility map were verified (Figure 2), well construction details were noted, and well casing exposure was measured. A summary of pre-sampling observations and measurements is provided in Table 1 and well locations as observed in the field are shown on Figure 2. Attachments B, C, and D include photographs, an inspection checklist, and field logbooks.

The audit team documented the facility's procedures for measuring static water levels and total well depth. Independent audit measurements for water level and well depth could not be obtained by Jacobs due to its inoperative water level sounder. Measurements obtained by the facility are reported in Table 1. The facility did not obtain well headspace measurements for organic vapors nor did they attempt to detect the presence of possible immiscible layers. Measuring equipment was decontaminated between wells using an Alconox wash followed by potable water and deionized water rinses. Audit measurements for organic vapors were obtained by Jacobs using a photoionization detector (HNU) in accordance with Jacobs SOP No. 6. Audit measurements corresponding to Jacobs SOP Nos. 21 and 25 could not be obtained due to the inoperative sounder. Standard Operating Procedures are contained in the Quality Assurance Project Plan for RCRA Comprehensive Groundwater Monitoring Evaluations.

Well evacuation procedures were observed and the following information was recorded: type and construction of purging equipment and lines; method of calculating well volume; the number of times the well is evacuated; field measurements during purging (pH, temperature, and conductivity were obtained by Jacobs and not by the facility); collection, management, and disposal of evacuated waters; equipment decontamination procedures; and physical properties of evacuated groundwater. This information is also summarized in Table 1.

General findings and observations made during pre-sampling activities are as follows:

1. The facility did not perform well headspace measurements prior to initiating field measurements and purging activities.

2. The facility did not attempt to determine whether or not immiscible layers are present in the aquifer.

3. In calculations of well volume, the groundwater contributed by the filter pack was not accounted for.

4. Field measurements of pH, temperature, and specific conductance were not obtained by the facility during purging, thus the stability of the waters at the time of sampling could not be evaluated by the facility.

5. Low yielding wells were bailed dry and then allowed to recharge prior to sampling; generally only one to three casing volumes were removed prior to sampling.

6. The management and disposal of evacuated water should be better controlled. Waters were collected in a bucket (the collection container should be graduated to facilitate estimation of volumes purged) and following purging, were discharged to the ground. A suggested alternative might be to contain purged groundwater and following sampling, cycle the groundwater through the onsite wastewater treatment plant.

7. Decontamination using Alconox is not the recommended procedure where volatile organic constituents are potentially present. A liquinox non-phosphate detergent should be used instead.

Sampling Activities

Samples were collected immediately following recharge; however, due to the low yields from wells MW-20, -21, and -22, MW-20 was not sampled, and MW-21 and -22 were sampled alternately (as recharge would allow). Observations of sampling activities and audit measurements are recorded in Table 2. Information obtained included: the type and construction of sampling equipment; depth of sample collection; dedicated vs. non-dedicated sampling equipment; procedures employed during the sampling of volatiles; sampling sequence; cross-contamination preventative measures; physical characteristics of the samples; containers and preservatives; equipment calibration and field measurements; sample split procedures; sample replicate procedures; other QA/QC sampling procedures. Quadruplicate audit measurements for field parameters were performed only on MW-13 due to insufficient sample volume (see Table 2). Samples collected by both the facility and Jacobs are summarized in Table 3. Sample preservation and collection techniques employed by both the facility and Jacobs are summarized in Table 4.

Due to the low groundwater elevation (drought-related), the greater sample volume required for split sampling, and a lack of planning for an audit, the facility's consultant indicated that he would be unable to remain onsite to complete the sampling event. Due to the consultant's intent to leave the site, the exit conference was held at 5:00 p.m. on August 10, 1988 to discuss observations concerning sampling procedures and to make arrangements for the procurement of field notes, chain of custody forms, and analytical results. Jacobs continued sample collection activities into the early morning hours of August 11, 1988 to obtain as complete a round of samples as well recharge would allow. The consultant indicated samples would be transported in iced coolers in his custody and would be delivered to the analytical laboratory (Warzyn Engineering) the next morning.

Inspection checklists (Attachment C) were completed as thoroughly as possible given the incomplete sampling and the consultant's failure to submit field logbooks, field notes, chain of custody forms, or any other data generated during the sampling event without prior approval of his client (Chamberlain Manufacturing Corporation).

Findings and observations made during the sampling activities are listed below:

1. The facility did not complete its appointed sampling round as it did not obtain a complete sample or duplicate set from MW-22, the background well, and could not sample MW-20 due to the poor recharge characteristics of this well. The facility's ability to provide statistical comparisons is in question because of incomplete data. Statistical evaluations of monitoring data have not been initiated as the facility is just completing its accelerated background monitoring activities.

2. A top-discharging bailer was used as the sampling device for all parameters. Due to the characteristics of the bailer, the low well yield, and the use of a single sample bottle to obtain quadruplicate measurements of TOX and TOC it is doubtful that samples for these parameters will be representative. Aeration and agitation of the samples was inherent when a single sample bottle could not be filled in one aliquot.

3. TOC samples were not handled in accordance with procedures for a volatile organic sample. The sample for TOC was field filtered and headspace was left in the sample bottles causing excessive aeration and agitation.

4. The consultant for the facility did not follow the sampling plan prepared for this event in terms of methods of sample collection, field parameter measurements, preservation, containers, and quadruplicate sampling.

5. Field measurements obtained during sampling were not obtained at the wellhead but were, instead, obtained at a remote location (consultant's van parked approximately 500 feet from MW-13, -21, and -22). Measurements obtained by the facility were significantly different than audit measurements obtained by Jacobs at the wellhead.

6. Quadruplicate measurements as required by the facility's groundwater sampling and analysis plan (four individual samples) were not obtained by the facility. Instead, a single sample container was used and field measurements/ analytical parameters would be obtained by performing four analyses on this single sample rather than analyses on four individual samples. Sample population variations will not be adequately represented by performing four analyses on aliquots obtained from the same sample container.

7. Quality assurance/Quality control samples obtained by the facility consisted only of an equipment blank. Duplicates were not obtained due to poor recharge characteristics and no provisions were made for trip blanks or spikes.

Exit Conference

The exit conference was held at 5:00 p.m. following cessation of the consultants sampling activities. Mr Doug Smith (Collis), Mr Jim Backus (Warzyn Engineering), and Larry Phyfe, DeLaine Fletcher, and Valda Terauds (Jacobs Engineering) were in attendance. It should be noted that the consultant did not complete the planned sampling activities and that the facility's compliance with their RCRA monitoring program has been jeopardized. The audit team summarized procedural deficiencies observed during the pre-sampling and sample collection activities; the consultant did not give any indications that these would be incorporated into future sampling activities at this facility. The audit team also requested copies of field notes, chain of custody forms, analytical requests and other data generated during sample collection activities. The consultant refused to provide this information directly to us and stated that it could be requested through his client (Chamberlain Manufacturing Corporation). Chamberlain Manufacturing Corporation was the previous facility owner; a fiduciary arrangement between Collis and Chamberlain states that Chamberlain will pay for the cleanup and monitoring of preexisting conditions at the time of property transfer. A copy of a blank chain of custody form was provided by Warzyn (Attachment F) and the consultant further indicated that analytical data from this sampling event would only be released to EPA via the client (Chamberlain).

As the sample collection activities by the facility were incomplete, Jacobs elected to attempt to complete data gathering activities following the consultant's departure and arrangements were made with Collis for after-hours access to complete the sampling of MW-21 and -22. Jacobs returned to the facility at 8:00 p.m. on August 10th and again at 12:05 a.m. and 5:50 a.m. on August 11, 1988 to complete monitoring well sample acquisition. A listing of samples collected by Jacobs during this sampling round is provided in Table 3. Mr. Smith (Collis) was contacted at 7:00 a.m. to indicate his acceptance of the samples Jacobs had collected and obtained a copy of our chain of custody form (Attachment E) for his records.

CONCLUSIONS

The field audit team observed the semi-annual background sampling event for the Collis Inc. RCRA detection monitoring program. The sampling event was not completed as outlined in the facility's Sampling and Analysis Plan and as such, failed to comply with RCRA Post-Closure groundwater monitoring requirements as specified in 40 CFR Part 265, Subparts F, G, and M. Specific violations include:

1. Wells not constructed to yield sufficient volumes of water for sampling (40 CFR Part 265, Subpart F, 265.91 (a)).

2. Appendix III constituents determining the suitability of the groundwater as a drinking water supply were not part of the facility's sampling and analysis plan (violates 40 CFR Part 265, Subpart F, 265.92(b)(1)).

3. Four replicate samples were not obtained from the background well as stated in the facility's sampling and analysis plan (violates 40 CFR Part 265, Subpart F, 265.92(b)(3)).

Statistical comparisons of upgradient and downgradient wells for this sampling round will not be possible for all parameters, as the background well was not sampled for a complete set of parameters (violates 40 CFR 265.93). Specifically, the validity of the data for the RCRA indicator parameters (pH, SC, TOC, and TOX) was compromised by improper parameter measurement, sample collection, and/or sample preservation techniques employed by the facility. The specific deficiencies in the sampling plan and procedures used to purge the wells and obtain samples were listed in earlier sections of this final report. Evaluation of the facility's documentation of field observations and measurements, chain of custody procedures, QA/QC program, and analytical data was not possible as supporting documents were not released to Jacobs at the time of the inspection. Once received, these documents will be incorporated into the final CME report.

The draft and final CME reports were prepared following receipt of the well completion information and include the results of the technical assessment portion of the CME, comparisons of analytical results for groundwater samples obtained during the QA/QC audit (facility vs. Jacobs), and reference this report in regards to the sampling inspection.

RECOMMENDATIONS

Based on the observations recorded concerning the facility's groundwater sampling program and sample collection practices, the current sample collection practices should be corrected for the deficiencies listed herein to insure that representative groundwater samples are indeed collected. Specifically, we recommend that:

1. The facility be required, as a minimum, to comply with 40 CFR 265.92 by adhering to the sample collection, and preservation procedures set forth in the facility's Sampling and Analysis Plan. The inspection revealed these practices were not consistently followed.

2. Collection, management, and disposal of evacuated groundwater be conducted to provide for temporary containment of evacuated waters and ultimate discharge to the facility's onsite wastewater treatment plant (provided there are no serious incompatibilities in water quality between the groundwater and process wastewaters treated by the facility). As an alternative, due to the minimal amount of water generated during purging, containerized waters could also be disposed of at an offsite RCRA-permitted treatment, storage, and disposal facility; or, if no hazardous constituents are detected, alternative disposal options could be considered, pending U.S. EPA Region VII and state agency approval.

3. To verify that the procedural deficiencies outlined in this inspection report have been corrected, we recommend the Collis facility be the subject of a post-CME maintenance inspection. The recommended seasons for such an inspection would be winter and spring such that the wells may be expected to yield more volume for sampling.

4. As Collis is the permittee, Collis is ultimately responsible for insuring that groundwater sampling and analysis is conducted in accordance with RCRA post-closure monitoring regardless. Thus, Collis should retain the authority to direct the consultants performing the sampling and analyses regardless of financial arrangements made with the consultants.

5. The analytical results for pH, SC, TOC, and TOX obtained during this sampling event are suspect and should not be used as a statistical bases for evaluating whether or not a release has occurred. In addition, the reveiw of past analytical data indicates TOX samples for the March 1988 sampling event were not available due to a broken sample bottle. In view of these deficiencies in the background data acquisition program, it is recommended that the facility perform two additional rounds of sampling for RCRA indicator parameters (pH, SC, TOC, and TOX) to obtain a cotemporaneous data set that could be reasonably included as background data. Sample collection activities shoudl be performed under U.S. EPA Region VII oversight to verify that the procedural deficiencies noted in this report have been corrected.

SUPPORTING DOCUMENTATION

Tables

Table 1.	Pre-Sampling Evaluation
Table 2.	Groundwater Sampling
Table 3.	Sample Collection Summary
Table 4.	Sample Containers and Preservatives

Attachments

Attachment A.	Facility's Sampling & Analysis Plan and Review Comments
Attachment B.	Photographs
Attachment C.	Inspection Checklist
Attachment D.	Field Logbooks
Attachment E.	Receipt of Samples and Chain of Custody (Jacobs)
Attachment F.	Sample Chain of Custody Form (Warzyn)

ATTACHMENT A

FACILITY'S SAMPLING & ANALYSIS PLAN
AND
REVIEW COMMENTS

REVIEW OF SAMPLING & ANALYSIS PLAN
DATED JANUARY 27, 1988
COLLIS, INC.
CLINTON, IOWA

The Sampling and Analysis Plan submitted by Warzyn Engineering on the behalf of Collis, Inc. dated January 27, 1988 was reviewed prior to the CME Groundwater Sampling Inspection by Valda Terauds and Larry Phyfe of Jacobs Engineering for consistency with the RCRA Technical Enforcement Guidance Document (TEGD) and EPA SOP No. FR011A, RCRA Groundwater Sampling Inspection. The checklist for elements of a good sampling plan (EPA SOP No. FR011A) was used as a guidance. Comments concerning the sampling plan are listed below.

1. The equipment used for determining static water elevations was not specified.

2. Evacuation procedures:

   a. No calculations were provided to demonstrate how the facility estimates the amount of water which should be purged from the well prior to sampling.

   b. The sampling plan states that either a pump or a bailer will be used to purge the well; the position of the pump intake during well evacuation was not specified.

   c. Liquids purged from the well are not collected, managed, or disposed of in a manner consistent with the TEGD. Purged liquids should be containerized and disposed of following receipt of analyses. An onsite wastewater treatment plant could be used as the disposal mechanisms for the evacuated groundwater.

   d. The elapsed time between well evacuation and sampling should be specified according to the anticipated productivity of the formation. For a productive formation, samples should be collected upon evacuation; for a low-yield well, samples should be obtained when recovery can provide adequate sample volume.

3. Sampling Procedure:

   a. Sampling equipment was not specified.

   b. Sample order was not specified other than that samples for organics (TOX and TOC) will be obtained first, followed by field measurements for pH, Temperature, and Specific Conductance. It is indicated that the sample for dissolved metals (Iron, Manganese, and Sodium) will be field filtered using a 0.45 micron filter with a vacuum pump. The field blank will also be field filtered.

4. Parameters to be Sampled:

   a. Container caps are discussed for TOX and phenols only; specifications for container caps for other parameters were not provided.

   b. TOC preservation technique is not consistent with the EPA SOP. The preservative specified in the guidance is hydrochloric acid, not sulfuric acid.

   c. Laboratory analytical methods are not specified in the plan.

5. Chain of custody procedures are not discussed although an understanding of the process is apparent.

6. Sample shipping was adequately addressed.

7. Appendix III parameter sampling and analysis was not included in the RCRA post-closure monitoring program (violates 40 CFR Part 265, Subpart F, 265.92 (b)(1)).

ATTACHMENT B

PHOTOGRAPHS

ATTACHMENT C

INSPECTION CHECKLISTS

ATTACHMENT D

FIELD LOGBOOKS

ATTACHMENT E

RECEIPT OF SAMPLES
CHAIN OF CUSTODY (JACOBS)

ATTACHMENT F

SAMPLE CHAIN OF CUSTODY FORM (WARZYN)

Figure 1. Site Plan - Collis, Inc.

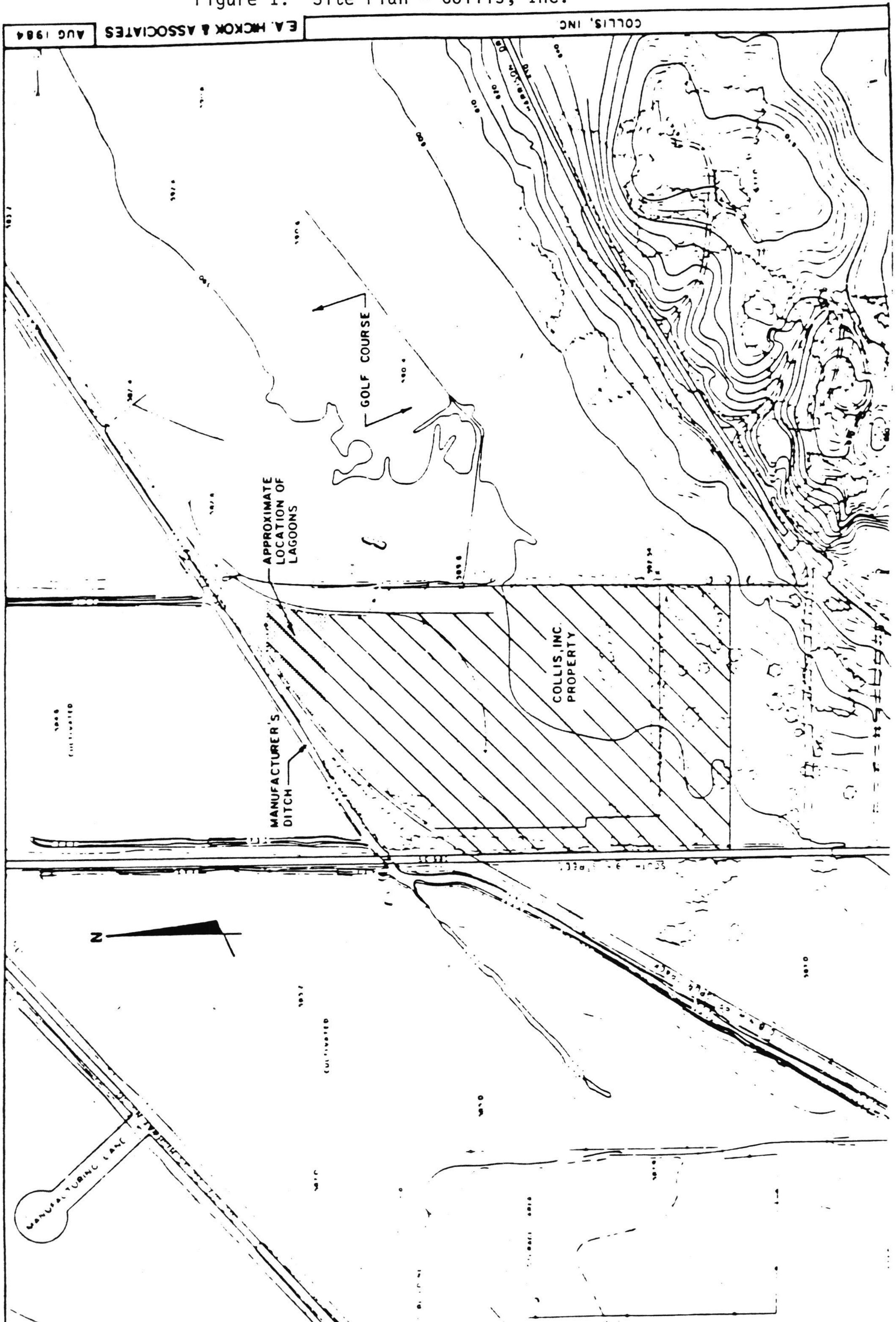

Figure 2. Monitoring Well Locations - Collis, Inc.

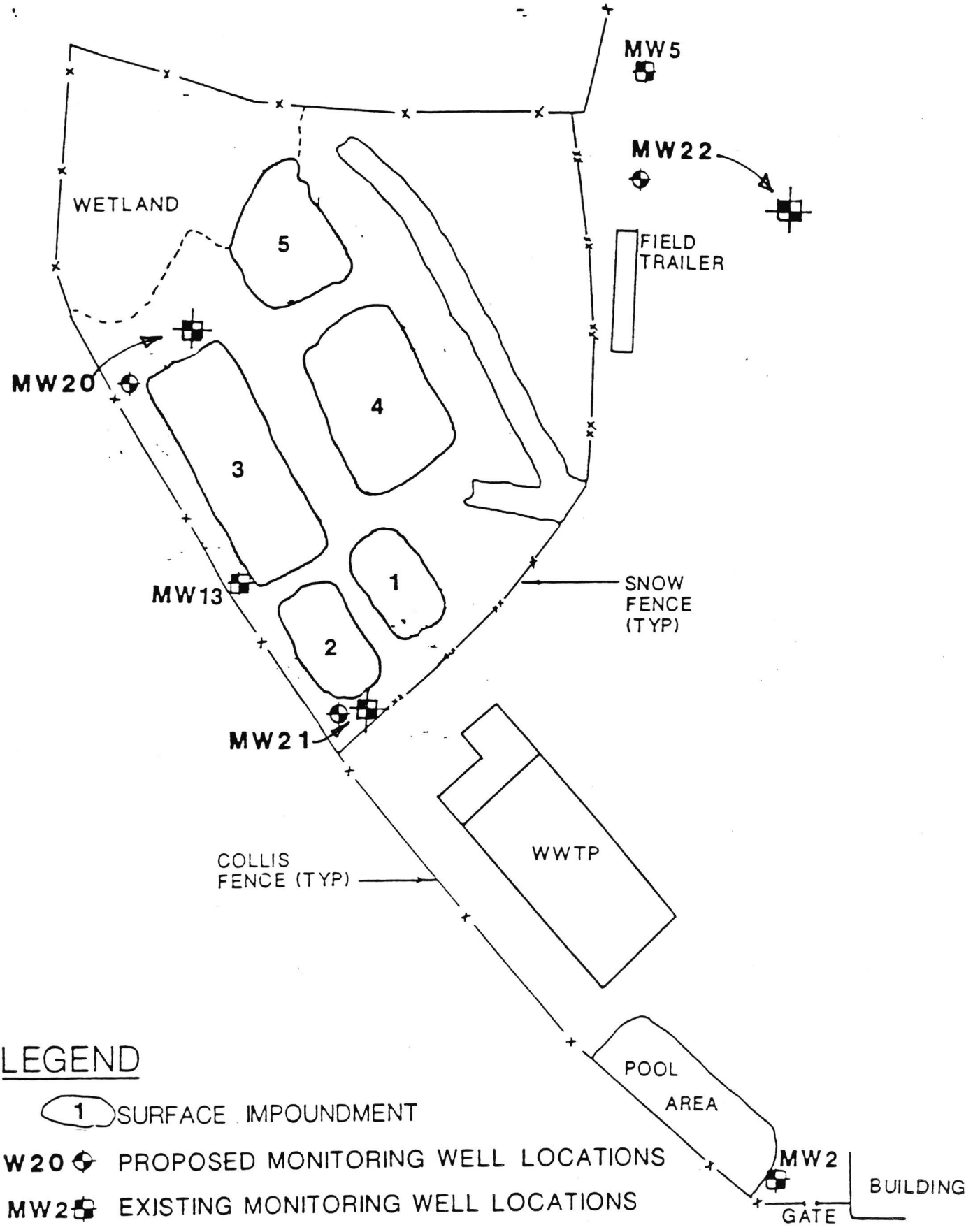

FIGURE 2

WARZYN

MONITORING WELL LOCATIONS
COLLIS, INC.
CLINTON, IOWA

TABLE 1
COLLIS QA/QC FIELD AUDIT
August 10, 1988
Pre-Sampling Evaluation

Construction Details/ Field Measurements	MONITORING WELLS MW-13	MW-20	MW-21	MW-22
CONSTRUCTION DETAILS:				
Location	Downgradient	Downgradient	Downgradient	Upgradient
Reference Point	10.5' S. of Fence	8' S. of Utility pole	19.6' SSE of Utility pole	W. of MW-5 among pallets
As Indicated on Map	Further W.	Further SE	Further S.	Further SW.
Diameter	2"	2"	2"	2"
Construction Materials	Sch. 40 PVC	Sch. 40 PVC	Sch. 40 PVC	Sch. 40 PVC
Locking Mechanism	Steel Outer Casing Locking hinged Cap	Steel Outer Casing Locking hinged Cap	Steel Outer Casing Locking hinged Cap	Steel Outer Casing Locking hinged Cap
Surface Seal	Cement Apron	Cement Apron	Cement Apron	Cement Apron
Stick up	34.5"	26.0"	23.0"	17.0"
PRE-SAMPLING MEASUREMENTS:				
Total Depth (feet)**	22.6'	11.6'	10.02'	8.75'
Sediment Thickness	None	None	None	None
Depth to Water	8.48'	8.01'	6.19'	6.93'
Measuring Device	Water Level Indicator	Water Level Indicator	Water Level Indicator	Water Level Indicator
Decontamination*				
Immiscible Layer	Not Measured	Not Measured	Not Measured	Not Measured
Measuring Device	NA	NA	NA	NA
3-5 Well Volumes	No	No	Yes	Yes
Calculation Technique**	pi x r2 x (TD - DTW) x gal/ft3			
Well Vol. Evacuated	1.09	0.86 - 1.29	3.97	3.3

TABLE 1
COLLIS QA/QC FIELD AUDIT
August 10, 1988
Pre-Sampling Evaluation

Construction Details/ Field Measurements	MONITORING WELLS MW-13	MW-20	MW-21	MW-22
Evacuation Equipment	ded. PVC Bailer	SS Bailer	SS Bailer	SS Bailer
Dedicated/non-Dedicated	Yes	No	No	No
Delivery Line Materials	nylon cord in well	Steel filament	Steel filament	Steel filament
Intake Position	Mid to Bottom	Bottom	Bottom	Bottom
Mgmt of Purged Water	Disch. to ground	Disch. to ground	Disch. to ground	Disch. to ground
Color	Clear	Black to Dr. Gray	Slightly Cloudy	Cloudy
Odor	None	None	None	None
Turbidity	Low	High	Moderate	Moderate
Oil and Grease	None	None	None	None

* Decontamination: Alconox wash
Potable Water Rinse
Deionized Water Rinse

** Well completion diagrams not available to confirm total depth.

TABLE 2
Collis QA/QC Field Audit
Groundwater Sampling

Construction Details/ Field Measurements	MONITORING WELLS MW-13	MW-20	MW-21	MW-22
Water Level Recovery	Full	Incomplete	Incomplete	Incomplete
Sampling Device	SS Bailer	SS Bailer	SS Bailer	SS Bailer
Dedicated/non-Dedicated	Yes-kept in well	Yes	No	No
Delivery Line Materials	Steel Filament	Steel Filament	Steel Filament	Steel Filament
Intake Position	Middle to Bottom	Bottom	Bottom	Bottom
Decontamination*				
Color	Clear	NS	Clear	Clear
Odor	None	NS	None	None
Turbidity	Low	NS	Low	Low
Oil and Grease	None	NS	None	None
	(Q) (F) (W)		(Q)	(Q)
pH	7.2/7.2/7.2/7.2 7.3 7.2	NS	6.5	7.0
Conductivity	650/650/650/650 600 800	NS	2000	2800
Temperature	19/22/22/22 15 24	NS	18	20
Other: Redox	NM	NS	NM	NM
Dissolved Oxygen	NM	NS	NM	NM
Turbidity	NM	NS	NM	NM
Sampling Sequence	2	NS	3	1

NS = Not Sampled; NM = Not Measured

(Q) = Quadruplicate Audit Measurements
(F) = Final Measurement at Conclusion of Sampling
(W) = Warzyn's Field Measurement

* Decontamination: Alconox wash
Potable Water Rinse
Deionized Water Rinse

TABLE 3
SAMPLE COLLECTION SUMMARY

PARAMETER	MW-13		MW-20		MW-21		MW-22	
	Warzyn	Jacobs	Warzyn	Jacobs	Warzyn	Jacobs	Warzyn	Jacobs
TOX (Q)	1	3 (1 br) 1 (dup)	NS	NS	1	4	1	1 (3NS)
TOC (Q)	1	1 (3NS) 1 (dup)	NS	NS	1	4	--	1 (3NS)
pH (Q)	1	4	NS	NS	1	1 (3NS)	1	1 (3NS)
SC (Q)	1	4	NS	NS	1	1 (3NS)	1	1 (3NS)
Phenols	1	2	NS	NS	1	1	--	1
Total Metals	NA	2	NS	NS	NA	1	NA	1
Dissolved Metals	NA	2	NS	NS	NA	1	NA	1
Diss. Metals (Fe, Mn, Na)	1	NA	NS	NS	1	NA	--	NA
SO4, Cl, F, Turb.	NA	2	NS	NS	NA	1	NA	1
NO3, TKN, PO4	NA	2	NS	NS	NA	1	NA	1
Inorganics: SO4, Cl	1	NA	NS	NS	1	NA	--	NA

Abbreviations: TOX = total organic halogens; TOC = total organic carbon; SC = specific conductance
SO4 = sulfate; Cl = chloride; F = fluoride; Turb. = Turbidity
Fe = Iron; Mn = Manganese; Na = Sodium
NO3 = nitrate; TKN = total kjeldahl nitrogen; PO4 = phosphate

Notes: br = broken; dup = duplicate; NS = Not sampled due to insufficient volume
NA = not analyzed; Q = Quadruplicate analyses required
-- = Not sampled by facility as a result of consultant's departure.

QA/QC Sample Summary: Facility - equipment blank
Jacobs - equipment blank
trip blank
duplicate sample (MW-13)

TABLE 4
SAMPLE CONTAINERS AND PRESERVATIVES
(as documented in the field)

	COLLIS		JACOBS	
ANALYTE	Container	Preservative	Container	Preservative
Dissolved Metals (Fe, Mn, Na)	250 ml polyethylene	Filtered**, HNO3, iced	NA	NA
Total Metals	NA	NA	1-L plastic cubitainer	HNO3, iced
Dissolved Metals	NA	NA	4 oz. polyethylene	filtered, HNO3, iced
Total Organic Halogens (TOX)	1-L amber glass*	iced**, no headspace	250 ml amber glass	iced, no headspace
Total Organic Carbon (TOC)]	250 ml polyurethane**	filtered*,**; H2SO4**, iced	4 oz. polyethylene**	HCl, iced, no headspace
Phenols	500 ml glass	iced, H2SO4	1-L plastic cubitainer	CuSO4/H2SO4, iced
Indicators: SO4, Cl	1-L polyethylene	filtered*,**; iced	NA	NA
Nitrate, TKN, Phosphorus	NA	NA	1-L plastic cubitainer	H2SO4, iced
Chloride, Fluoride, Turbidity, Sulfate	NA	NA	1-L plastic cubitainer	iced

* conflicts with facility's Sampling and Analysis Plan prepared by Warzyn.

** conflicts with procedures set forth in the RCRA Technical Enforcement Guidance Document.

NA = Not Analyzed

SO4 = Sulfate; Cl = Chloride, TKN = Total Kjeldahl Nitrogen; Fe = Iron; Mn = Manganese; Na = Sodium

HNO3 = Nitric Acid; CuSO4 = Copper sulfate; H2SO4 = Sulfuric Acid

ATTACHMENT A

FACILITY'S SAMPLING & ANALYSIS PLAN
AND
REVIEW COMMENTS

WARZYN

Engineers & Scientists
Environmental Services
Waste Management
Water Resources
Site Development
Special Structures
Geotechnical Analysis

January 27, 1988
60123

Mr. Harry Gabbert
U.S. EPA Region VII
RCRA Section
726 Minnesota Avenue
Kansas City, Kansas 66101

Dear Mr. Gabbert:

Pursuant to your request, please find transmitted one copy of the "Sampling and Analysis Plan" January 1988 for Collis, Inc. in Clinton, Iowa. If you should have any questions, please contact me at 312/773-8484.

Sincerely,

WARZYN ENGINEERING INC.

J D Adams/LSS

Joseph D. Adams Jr., P.E.
General Manager - Chicago

Enclosure

123L04LS

cc: Mr. Robert A. Bell
Mr. Michael Dolan
Mr. Thomas Styczen

Warzyn Engineering Inc.
Hamilton Lake
One Pierce Place
Suite 1[illegible]
Itasca, Illinois 60143-26[illegible]
(312) 773-8484

SAMPLING AND ANALYSIS PLAN

GROUNDWATER MONITORING PLAN FOR SITE CLOSURE FOR METAL FINISHING IMPOUNDMENT

COLLIS, INC.
CLINTON, IOWA

REVISION: DRAFT

DATE: JANUARY 1988

WARZYN

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1.0 INTRODUCTION

1.1 OBJECTIVES

The Plan documents the procedures which the sampling team personnel will follow. This Sampling and Analysis Plan (SAP) describes the field activities involved in sample collection during performance of the groundwater monitoring plan for site closure of the four (4) metal finishing impoundments at the Collis, Inc. facility in Clinton, Iowa. The Plan was designed in accordance with the applicable regulations (40 CFR 265 Subpart F). The groundwater monitoring program will be performed to gather and assess information needed to accomplish the following general objectives:

- Assess the impact of the impoundment areas on the groundwater system,
- Identify potential pathways of migration of potential contaminants from the impoundment area,
- Provide data to conduct a detailed evaluation for further remediation if necessary, and
- Provide further recommendations for groundwater monitoring at the site.

Available data and information concerning the groundwater quality in the impoundment area are insufficient for the purpose of a site closure. Several of the existing wells are too far from the impoundment area. Wells were not constructed properly or there are inadequate records concerning well construction, so interpretation of monitoring results would be questionable. In addition, existing sampling results indicate the possibility of surface contamination or improper well construction.

An effective groundwater monitoring plan will be implemented and consist of the following:

- Installing monitoring wells and collecting groundwater samples for analysis, and
- Establishing background groundwater quality data.

1.2 SAMPLING TEAM MEMBER RESPONSIBILITIES

Field sampling will be performed by Warzyn Engineering Inc. (Warzyn). Responsibilities of the sampling team members are described below.

1.2.1 Field Coordinator

The Field Coordinator (FC) will be responsible for the sampling efforts; will assure the availability and maintenance of all sampling equipment; and materials and will provide for shipping and packing materials. The FC will be responsible for the completion of all chain-of-custody and sample traffic forms; for the proper handling and shipping of the samples collected; and for the accurate completion of field log books. The FC will also be responsible for maintaining communications with on-site and off-site personnel.

The FC is also responsible for daily supervision and documentation of all safety, decontamination, environmental monitoring, and field medical monitoring activities. The FC is responsible for assuring that all field personnel comply with the provisions of the Site Health and Safety Plan and has the authority to stop site work in the event of safety violations. The FC is responsible for designating and marking restricted areas during various site activities and for redesignating these areas as unrestricted when it is appropriate to do so.

1.2.2 Sampling Team Members

The Sampling Team Members (STM) will perform field measurements, complete sampling logs, collect samples, transfer them for shipping, decontaminate sampling equipment, and assist with shipping and packaging as directed by the FC.

2.0 GENERAL SAMPLING INFORMATION

2.1 SCOPE

The groundwater monitoring program will involve the collection and analysis of representative groundwater samples. The groundwater sampling will be conducted on a monthly basis for four months and again during the sixth month. Quarterly sampling will then be conducted to more accurately assess the groundwater quality which will represent seasonal changes (e.g. spring, winter) until the end of the first year.

Compliance monitoring will be initiated one month after well completion. Sampling will be conducted on a quarterly basis for the first year, and then, assuming compliance, it will be continued semi-annually for at least two (2) years following well completion. Monitoring will be discontinued after clean closure has been demonstrated.

Table 1 presents a summary of the groundwater sampling including monitoring wells to be sampled, parameters to be tested, and the monitoring schedule. Samples will be collected from each of the three proposed monitoring wells and existing well MW13. The samples will be analyzed for the groundwater contamination indicators listed in Table 1 during the first four months and at the sixth, eighth, and eleventh months of the first year. Thereafter, analysis for contamination indicators will be conducted semi-annually. The samples will be analyzed for the groundwater quality indicators (listed in Table 1) during the first and sixth months of the first year and thereafter, once per year.

A data base of background water quality will be established by conducting quadruplicate analyses (i.e. four replicates) from the upgradient monitoring well (MW22) for each of the first four months after well construction. The samples will be analyzed for the groundwater contamination indicators in Table 1. The samples collected from all wells during the sixth month will be used to test for statistically significant variation from the background water quality data base. Quadruplicate analyses of the contamination indicators will be performed on these samples.

2.2 SAMPLE SHIPMENT

Following sample collections, the STM will help the FC prepare documentation and package the bottles for shipment. Bottles will be labeled with all required information and this information recorded on field recording sheets.

Sample bottles will be placed in coolers for storage and shipment as indicated in Table 2. Ice will be sealed in plastic bags to prevent leakage. The bottles will be cushioned using plastic, foam or other similar packing material. Samples will be shipped to the Warzyn Analytical Laboratory in Madison, Wisconsin; via overnight courier.

2.3 QUALITY CONTROL REQUIREMENTS

The sampling activities will include the collection of field blanks for purposes of quality control. One field blank will be prepared for each sample type and container size. One field blank will be prepared per group of 10 or fewer samples of water collected per sampling activity. The field blank sample will be prepared using deionized water. The field blank water will be routed through the bailer which was used for sampling the wells.

3.0 SAMPLING LOCATIONS AND PROCEDURES

3.1 GROUNDWATER MONITORING WELLS

3.1.1 Monitoring Well Construction

Three (3) proposed monitoring wells and one (1) existing monitoring well will be sampled to provide data concerning contaminant sources, potential contamination pathways and variation of chemical concentration with depth. The locations of these wells are shown on Figure 1.

The monitoring system will consist of four (4) monitoring wells, one (1) well located upgradient (northeast) of the former impoundment area, and three (3) located downgradient (southwest) of the impoundment area. Existing monitoring well MW13 will be supplemented by constructing three (3) additional monitoring wells, MW20, MW21, and MW22. Well MW22 will be constructed approximately 150 feet southeast of the surface impoundment area and will provide upgradient groundwater data. Two (2) new wells, MW20 and MW21, will supplement existing well MW13 to provide downgradient groundwater data. MW20 and MW21 will be installed within 10 feet of the excavation area.

Soil borings for each monitoring well will be advanced by a drill rig using 6.25-inch inside diameter hollow stem augers. Each boring will be continuously sampled by split-barrel sampler and a field log will be kept by a qualified geologist or geological engineer.

All new monitoring wells will be constructed with 2-inch inside diameter schedule 40 PVC well casing and flush threaded 0.010 slotted PVC screen. The monitoring well screens will be placed to intersect the water table in the unconsolidated deposits which overlie the bedrock at the site. Clean washed silica sand will be placed in the annular space around the screen. To prepare an effective sand pack, dry sand will be dropped, several handfuls at a time, down the space between the hollow stem auger and well casing. The sand pack will extend 2 feet above the top of the screen. A 2-foot seal of bentonite pellets will be placed on top of the sand pack, also by dropping small quantities to avoid bridging above the zone of interest. The pellets will be allowed to hydrate, either by formation water, or by addition of potable water. The remaining annulus will then be backfilled with a 10 percent bentonite/cement grout mixture. The grout will be injected from the bottom of the open annulus through a tremie pipe with side openings.

Finally, a locking steel protective casing will be placed over the well. It will be set in a concrete pad, which is finished sloping outward from the

casing to allow surface runoff. A detail showing typical monitoring well construction is provided in Figure 2. All drilling tools such as augers, rods, and drill bits will be steam-cleaned between each well. Each well will be developed by bailing until pH and specific conductance have stabilized. Stabilization will be determined by three successive measurements of pH with no greater change than 0.5 pH units and of conductivity with no greater than five percent.

3.1.2 Groundwater Monitoring Well Sampling

Prior to any monitoring well sampling, a static groundwater elevation measurement (depth to water) will be taken. The groundwater elevation measurement will be made on all accessible monitoring wells, and the data will be used to determine hydraulic gradient and to calculate groundwater flow directions. A survey crew will document precise horizontal and vertical locations of each well. Elevations will be tied to U.S. Geological Survey elevations so groundwater elevations can be used to construct water table maps and calculate hydraulic gradients.

Monitoring wells will be purged using a pump or a bailer to remove a volume of water at least three (3) times the casing volume. If the well is pumped dry and exhibits slow-recovery, it will be allowed to recover prior to collecting samples.

Samples will be collected no more than 24 hours following the purging of the monitoring wells. The first water collected will be submitted for the total organics carbon analysis. Specific conductivity, temperature, and pH will be measured in the field at the time of sampling, using portable instruments in accordance with Section 3. Field temperature measurements will be made solely for the purpose of calculating specific conductance at 25°C.

Groundwater samples will be collected for the parameters and at the frequency described in Section 2.1 and listed in Table 1. Two field duplicate and two field blank samples will be collected according to the guidelines presented in Section 2.3. One field duplicate and field blank samples will be collected from a new shallow monitoring well, and a second set of duplicates and blank samples will be collected from an existing monitoring well. Duplicate samples will be obtained by first filling one set of sample bottles for the parameters to be tested and then filling a second (identical) set of sample bottles from the same well. The blank samples will be prepared using deionized water stored in polyethylene containers.

The sample bottles and sample preservation required for this activity are listed in Table 2. Samples collected for analysis of dissolved metals (iron, manganese, and sulfate) will be filtered in the field using 0.45-micron filter apparatus and a hand-powered or electric-powered vacuum pump. Samples will be preserved after filtering. The field blank sample for dissolved metals will be routed-through the filtering apparatus. Monitoring well samples will be shipped daily to the Warzyn Analytical Laboratory in Madison, Wisconsin. All monitoring well samples will be tested for parameters as shown on Table 1.

3.2 FIELD TESTS FOR pH, TEMPERATURE AND CONDUCTIVITY

Specific conductivity, temperature and pH will be measured in the field using portable instruments at the time of sampling each monitoring well. The conductivity meter will be zeroed according to procedures specified for the instrument prior to recording measurements for the day. Buffer solutions bracketing the reading will be used to calibrate the pH meter prior to and after use each day. A small volume of sample will be taken from the source and poured into polyethylene or glass containers and the instrument probes placed into the water. Following readings, the water samples will be discarded and the instrument probes decontaminated. Temperature measurements will be made solely for the purpose of calculating specific conductance at 25°C. Measurements, including calibration data, will be recorded in the field notebook and/or the field recording sheets. The field measurement data will be used to trace and identify suspect contamination.

4.0 DECONTAMINATION PROCEDURES

Procedures to decontaminate equipment and personnel are summarized below.

4.1 PERSONNEL DECONTAMINATION

Personnel decontamination will be conducted before leaving a work area and will include (but not be limited to) the following procedures:

1. Remove disposable coveralls, booties, and outer gloves and place in plastic bags;
2. Wash boots in soap and water (alconox or equivalent) if visually contaminated or bootie had torn during work;
3. Remove hard hat and store in appropriate place; and
4. Remove disposable inner gloves (if used) and place in plastic bag.

Personnel will be careful to wash hands and face before eating.

4.2 EQUIPMENT DECONTAMINATION

All sampling equipment (including bailers) will be decontaminated prior to use, and all reusable non-dedicated equipment (scoops, buckets, split spoons) will be decontaminated between samples and before removal from the site. The procedure is as follows:

- Soap (alconox or equivalent) and water wash;
- Potable water rinse; and
- Deionized water rinse at least twice.

4.3 GENERATED WASTES

All disposable protective clothing and disposable sampling equipment will be placed into plastic bags and disposed of at the direction of Collis, Inc. All liquids such as development, purge, and decontamination water will be drained onto the ground at the site. These materials are not considered as hazardous by Warzyn and will require no special handling.

5.0 DOCUMENTATION

5.1 FIELD LOG BOOKS

Field log books and Warzyn field recording sheets will be used to record data. Entries will be described in as much detail as possible so that persons going to the site could reconstruct a particular situation without reliance on memory.

Bound field survey books will be used to record field logs. Each log book will be identified by the project number.

The title page of each notebook will contain:

- Person or organization to whom the book is assigned,
- Book number,
- Project name and number,
- Start date, and
- End date.

Entries into the log book will contain a variety of information. At the beginning of each entry, the date, start time, weather, names of all sampling team members present, level of personal protection being used, and the signature of the person making the entry will be entered. The names of visitors to the site and the purpose of their visit will be recorded in the field log book.

Measurements made and samples collected will be recorded in the books and recording sheets and no erasures will be made. If an incorrect entry is made, the information will be crossed out with a single strike mark. Wherever a sample is collected or a measurement is made, a description of the location of the station shall be recorded. All equipment used to make measurements will be identified, along with the date of calibration.

Samples will be collected following the procedures documented in the SAP (Sections 2 and 3). The equipment used to collect samples will be noted, along with the time of sampling, sample description, depth at which the sample was collected, and volume and number of containers. Sample

identification numbers will be assigned prior to sample collection. Duplicates, which will receive a separate sample identification number, will be noted under sample description.

5.2 SAMPLE IDENTIFICATION DESIGNATION

A sample numbering system will be used to identify each sample, including duplicates and blanks. Each sample identifier will have three components: a project identifier; a sample type and location code; and a numerical code indicating the sampling event. A listing of sample identifications will be maintained in a log book kept by the FC.

5.2.1 Project Identifier

A two-letter designation will be used to identify the sample collection site. For this project, the designation will be CL, which represents Collis.

Each sample collected will be identified by a two-digit alpha code corresponding to the type of sample, followed by the sample location number. The alpha codes are as follows:

- GW - Groundwater sample from monitoring well.
- SS - Soil split spoon sample from soil boring.
- SW - Surface water sample.
- FB - Field Blank

A four-digit numbering system coresponding to the well identification will be used to indicate the sampling location. All other pertinent data related to sampling locations will be kept in the field sampling notebook.

5.2.2 Sampling Event

Samples will have an identifier to indicate sampling event ("01", "02", etc.). Duplicate samples will be identified by "91" for the first sampling event, "92" for the second sampling and so on.

5.2.3 Example of Sample Numbers

An example of a sample number is:

CL-GWMW22-92

Collis Inc. Site - groundwater sample from monitoring well MW22, duplicate sample, second sampling event.

All other pertinent data relating to the sampling event will be included in the sampling notebook.

5.3 PHOTOGRAPHS

Representative photographs may be taken of sampling stations to show surrounding area and used to locate the station. The film roll number may be identified by taking a photograph of an informational sign on the first frame of the roll. This sign would have the job and film roll number written on it so as to identify the pictures contained on the roll.

For example:

Collis, Inc.
Roll Number 1
July 1, 1988

5.4 SAMPLE DOCUMENTATION

All samples will be collected under chain-of-custody procedures and will include the use of chain-of-custody forms, custody seals, and field notebooks or field recording sheets for sample documentation. The latter will include sampling time, location, samplers, pertinent PID readings, weather conditions, and any field modifications of sampling strategy. Standard forms including chain-of-custody record forms, sample labels, and chain-of-custody seals will be maintained throughout the sampling activities.

A copy of the chain-of-custody form to be used is shown in Figure 3. Requirements for these forms include the following:

- Separate forms will be used for each shipping container (steel foam or plastic cooler);
- Carrier service does not need to sign form if custody seals remain intact during shipment; and
- All samples will be listed on a chain-of-custody form.

An example of the chain-of-custody seal to be used for sample shipping is shown in Figure 4. Seal requirements include the following:

- Two (2) chain-of-custody seals per shipping container will be attached to the cooler lid to provide evidence that samples within have not been disturbed in transit;
- Seals will be covered with clear tape prior to shipping sample containers; and
- Chain-of-custody seal numbers will be recorded on chain-of-custody forms.

A copy of the sample label to be used for the samples is shown is Figure 5. Each sample container must have a sample label affixed to it. The label will specify sample date, parameters for analysis, and preservative used.

The documentation accompanying the samples shipped to the laboratory will be sealed in a plastic bag taped to the inside of the cooler lid. The lid of the sample cooler will be securely taped shut prior to shipment. The FC will be responsible for collecting the samples, completing the sample documentation and properly packaging the samples for shipment to the laboratory with the help of the STM. Once in the laboratory's possession, sample custody will be the responsibility of the laboratory sample custodian.

All pertinent information regarding the samples will be recorded in the site log book maintained by the FC and in logs maintained by each sampling crew. The information will include sampling time, location, designation, and samplers. Photoionization detector (PID) readings, weather conditions and field modifications of sampling strategy will also be recorded. Any photographs taken at sampling locations will be noted in the logs with the time, date, and location recorded.

TABLE 1
SUMMARY OF GROUNDWATER SAMPLING
COLLIS, INC.
CLINTON, IOWA

I. MONITORING WELLS TO BE SAMPLED

MONITORING WELLS: MW13 MW20 MW21 MW22

II. PARAMETERS TO BE TESTED

Contamination Indicators

pH (field)
Specific Conductance (field)
Total Organic Carbon
Total Organic Halogen

Quality Indicators

Chloride
Iron
Manganese
Phenols
Sodium
Sulfate

III. MONITORING SCHEDULE

First Year - Month 1

Contamination Indicators, all wells
Quality Indicators, all wells
Depth to Water, all wells

First Year, Months 2, 3 and 4

Contamination Indicators, MW22 only
Depth to Water, all wells

First Year - 6th Month

Contamination Indicators, MW-22
Quality Indicators, all wells
Depth to Water

First Year, Months 8 and 11

Contamination Indicators, all wells
Depth to Water, all wells

Second Year - Semi-Annual Monitoring

Contamination Indicators, all wells
Depth to Water, all wells

Second Year - Annual Monitoring

Quality Indicators, all wells
Depth to Water, all wells

WARZYN

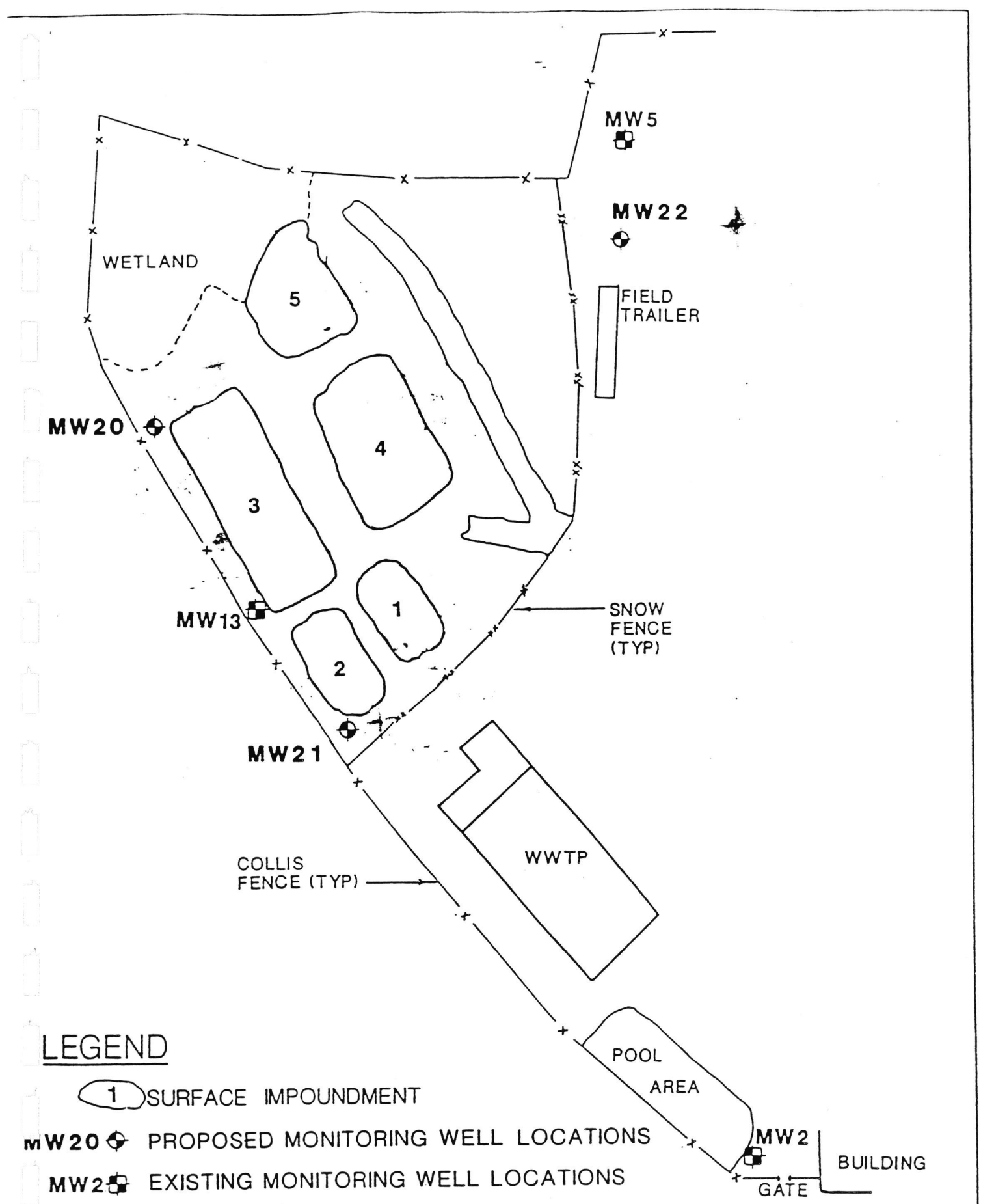
TABLE 2

SAMPLE QUANTITIES, BOTTLES, PRESERVATION AND PACKAGING
REQUIRMENTS FOR WATER SAMPLES
COLLIS, INCORPORATED

ANALYSIS	BOTTLES AND JARS	PRESERVATION	HOLDING TIME	VOLUME OF SAMPLE	SHIPPING	PACKAGING
MONITORING WELL						
Total Organic Carbon (TOC)	One 250-ml high density polyurethane bottle	5 ml/l, 1:1 H_2SO_4 to a pH<2, Iced to 4°C	28 days	Fill bottle to neck	Overnight Delivery	No. 1 foam liner or vermiculite
Total Organic Halogen (TOX)	One 250-ml glass amber bottles (Teflon-Lined Caps)	Iced to 4°C	14 days	Fill bottle completely with no head space	Overnight Delivery	No. 1 foam liner or vermiculite
Phenols	One 500 ml. glass bottle (Teflon-Lined Caps)	5 ml/l, 1:1 H_2SO_4 to a pH<4, Iced to 4°C	28 days	Fill bottle completely with no head space	Overnight Delivery	No. 1 foam liner or vermiculite
Inorganics Metals (iron, manganese, sodium)	One 250-ml high density Polyethylene Bottle	5-ml/L,1:1 HNO_3 to pH <2, Iced to 4°C.	6 months	Fill to shoulder of bottle	Overnight Delivery	No. 1 foam liner or vermiculite
INDICATOR PARAMETERS						
Alkalinity	One 1-Liter high density Polyethylene Bottle[1]	Iced to 4°C	14 days	Fill to shoulder of bottle	Overnight Delivery	No. 1 foam liner or vermiculite
Chloride	One 1-Liter high density Polyethylene Bottle[1]	None Required	28 days	Fill to shoulder of bottle	Overnight Delivery	No. 1 foam liner or vermiculite
Sulfate	One 1-Liter high density Polyethylene Bottle[1]	Iced to 4°C	28 days	Fill to shoulder of bottle	Overnight Delivery	No. 1 foam liner or vermiculite

NOTE

1 - 1 LITER TOTAL NEEDED FOR ALL INDICATORS LISTED

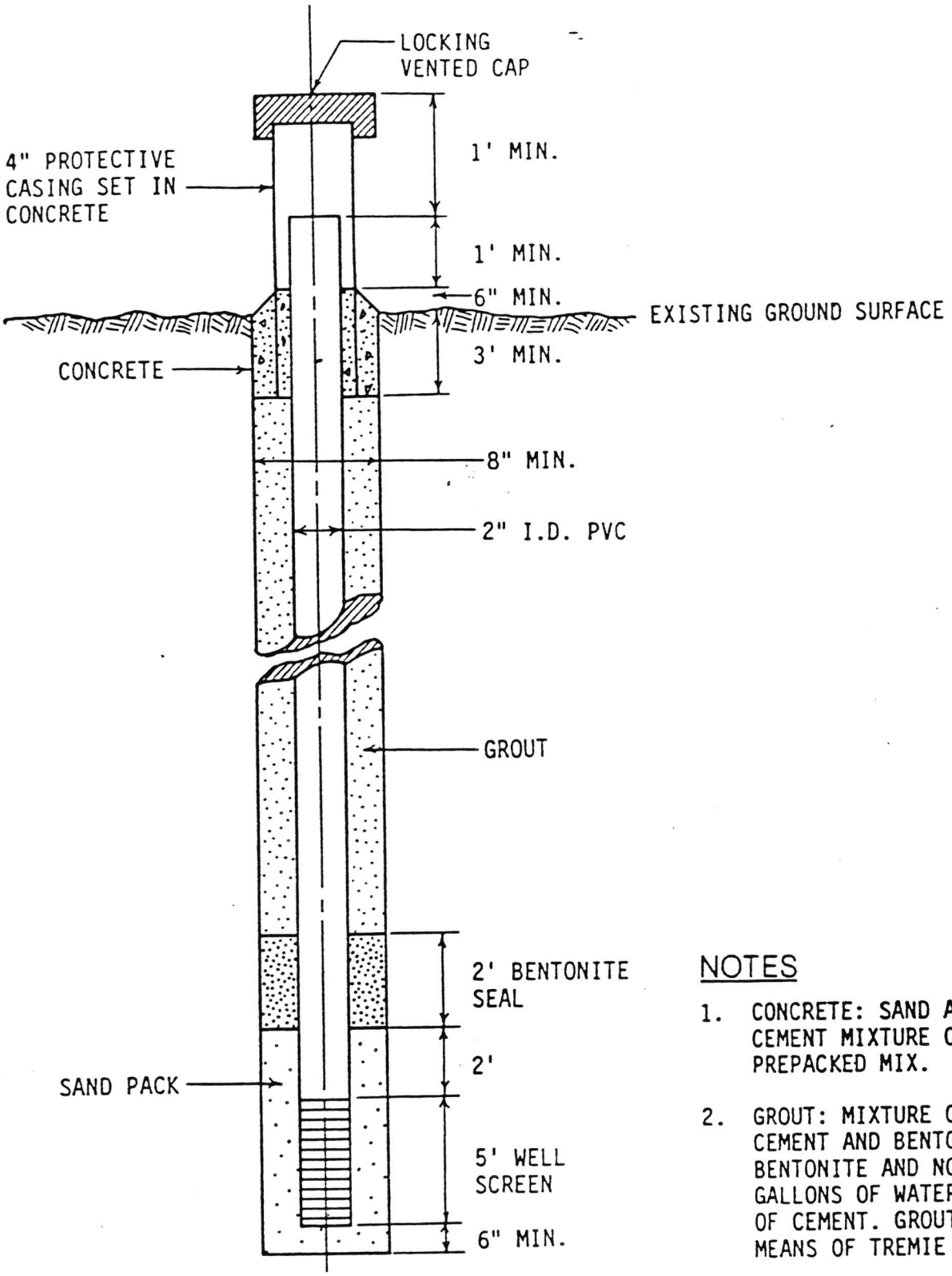


APPROXIMATE SCALE: 1" = 70'

FIGURE 1

WARZYN ENGINEERING INC

MONITORING WELL LOCATIONS
COLLIS, INC.
CLINTON, IOWA



NOTES

1. CONCRETE: SAND AND PORTLAND CEMENT MIXTURE OR SAKRETE PREPACKED MIX.
2. GROUT: MIXTURE OF PORTLAND CEMENT AND BENTONITE USING 10% BENTONITE AND NO MORE THAN 7 GALLONS OF WATER PER BAG OF CEMENT. GROUT PLACED BY MEANS OF TREMIE GROUTING.
3. SAND PACK: CLEAN WASHED FLINT SAND
4. WELL SCREEN: 2 INCH I.D., 10 SLOT (0.01) PVC

FIGURE 2

NOT TO SCALE				WARZYN ENGINEERING INC	TYPICAL MONITORING WELL DESIGN
DWN ALH	APP'D	DATE	60123-A1		COLLIS, INC. CLINTON, IOWA

FIGURE 3

Madison, Wisconsin 53705
(608) 273-0440

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME	NO. OF CONTAINERS								REMARKS
SAMPLERS: *(Signature)*										
LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION					

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*		Date / Time	

Remarks

Distribution: White — Accompanies Shipment; Yellow — Laboratory File; Pink — Coordinator Field Files

No 7 0645

WARZYN

CHAIN OF CUSTODY SEAL

WARZYN ENGINEERING INC.
ONE SCIENCE COURT
UNIVERSITY RESEARCH PARK
P.O. BOX 5385
MADISON, WI 53705
(608) 273-0440

№ 1467

FIGURE 4
CHAIN-OF-CUSTODY SEAL

Project # _____ Lab # _____

Sample Description _____

Date Collected _____ By _____

Preservative: HNO_3 H_2SO_4 NaOH None Other ____
Filtered Unfiltered

FIGURE 5
SAMPLE LABEL

REVIEW OF SAMPLING & ANALYSIS PLAN
DATED JANUARY 27, 1988
COLLIS, INC.
CLINTON, IOWA

The Sampling and Analysis Plan submitted by Warzyn Engineering on the behalf of Collis, Inc. dated January 27, 1988 was reviewed prior to the CME Groundwater Sampling Inspection by Valda Terauds and Larry Phyfe of Jacobs Engineering for consistency with the RCRA Technical Enforcement Guidance Document (TEGD) and EPA SOP No. FR011A, RCRA Groundwater Sampling Inspection. The checklist for elements of a good sampling plan (EPA SOP No. FR011A) was used as a guidance. Comments concerning the sampling plan are listed below.

1. The equipment used for determining static water elevations was not specified.

2. Evacuation procedures:

    a. No calculations were provided to demonstrate how the facility estimates the amount of water which should be purged from the well prior to sampling.

    b. The sampling plan states that either a pump or a bailer will be used to purge the well; the position of the pump intake during well evacuation was not specified.

    c. Liquids purged from the well are not collected, managed, or disposed of in a manner consistent with the TEGD. Purged liquids should be containerized and disposed of following receipt of analyses. An onsite wastewater treatment plant could be used as the disposal mechanisms for the evacuated groundwater.

    d. The elapsed time between well evacuation and sampling should be specified according to the anticipated productivity of the formation. For a productive formation, samples should be collected upon evacuation; for a low-yield well, samples should be obtained when recovery can provide adequate sample volume.

3. Sampling Procedure:

    a. Sampling equipment was not specified.

    b. Sample order was not specified other than that samples for organics (TOX and TOC) will be obtained first, followed by field measurements for pH, Temperature, and Specific Conductance. It is indicated that the sample for dissolved metals (Iron, Manganese, and Sodium) will be field filtered using a 0.45 micron filter with a vacuum pump. The field blank will also be field filtered.

4. Parameters to be Sampled:

   a. Container caps are discussed for TOX and phenols only; specifications for container caps for other parameters were not provided.

   b. TOC preservation technique is not consistent with the EPA SOP. The preservative specified in the guidance is hydrochloric acid, not sulfuric acid.

   c. Laboratory analytical methods are not specified in the plan.

5. Chain of custody procedures are not discussed although an understanding of the process is apparent.

6. Sample shipping was adequately addressed.

7. Appendix III parameter sampling and analysis was not included in the RCRA post-closure monitoring program (violates 40 CFR Part 265, Subpart F, 265.92 (b)(1)).

ATTACHMENT B

PHOTOGRAPHS

JE JACOBS ENGINEERING

RECORD OF PHOTOGRAPHS

Film Type Kodak 35 mm./50 mm lens
A Number 200
Roll #1

Collis, Inc.
Project Code 05 B846 00

PHOTO NO.	DATE	TIME	FOCAL LENGTH	WEATHER CONDITIONS	LOCATION	DESCRIPTION OF PHOTOGRAPH
1	8-10-88	8:30	1.8	w/in facility	Drum Storage area	Waste oil & cleaning solvent drums
		8:35	1.8	"	Drum Storage area	panorama
3			1.8	"	"	"
			1.8	"	"	"
			1.8	"	"	White xytal on floor near drums
6		8:40	11.0	Overcast, 80° F	View to NNW	Waste/trash pickup area
		8:45	4.0	w/in facility	choline recycling area	Choline salts & drums
8		8:45	4.0	"	"	choline salts in molds
		8:45	4.0	"	"	choline neutralization bath
		8:45	4.0	"	"	sump - chrome wastes
11		9:00	4.0	overcast, 80° F	Above-ground storage tanks; South view	Spent acids & cleaning solvents
		9:05	4.0	"	"	Nitric & hydrochloric acid tanks
13		9:08	4.0	"	"	panorama
		9:08	4.0	"	"	"
		9:08	4.0	"	Settling basin near onsite WWTP	"
16		9:08	4.0	"	WWTP	"
		9:20	5.6	"	Former Impoundments view to NE	Condition of fence around closed impoundments
		9:20	5.6	"	"	"
19		9:20	5.6	"	"	"
		9:20	5.6	"	"	"
21		9:25	5.6	"	Settling basin - WWTP	

ces: (1) Express Time in 24 hour clock notation; (2) Focal Length is of lens used.

Signature of Photographer Valda Travers

JE JACOBS ENGINEERING

RECORD OF PHOTOGRAPHS

Film Type Kodak 35mm / 50 mm lens
A Number 200

Roll #1 (cont'd.)

Collis, Inc.
Project Code 05 B846 00

PHOTO NO.	DATE	TIME	FOCAL LENGTH	WEATHER CONDITIONS	LOCATION	DESCRIPTION OF PHOTOGRAPH
22	8-10-88	9:35	5.6	Overcast, 80°F	MW-21, NNE view	MW-21, west of impoundments
23		9:40	5.6	"	Surface impoundments	Panorama to NE
24		"	"	"	"	"
25		"	"	"	"	"
26		"	"	"	"	"
27		"	"	"	"	"
28		"	"	"	"	"
29		9:55	5.6	"	MW-13, N. of impound.	Note nylon cord for dedicated PVC bailer
30		9:47	4.0	"	MW-20, NE of impound	MW-well head sampling
31		9:48	4.0	"	"	Water level measurement
32		10:00	4.0	"	View to S & W.	Panorama – Collis facility
33		"	"	"	"	"
34		"	"	"	"	"
35		"	"	"	"	"
36						

Notes: (1) Express Time in 24 hour clock notation; (2) Focal Length is of lens used.

Signature of Photographer Valda Jewards

JE

RECORD OF PHOTOGRAPHS

Collis, Inc.

Film Type Kodak 35 mm / 50 mm lens Roll #2 Project Code 05 B 846 00

ASA Number 200

PHOTO NO.	DATE	TIME	FOCAL LENGTH	WEATHER CONDITIONS	LOCATION	DESCRIPTION OF PHOTOGRAPH
1	8-10-88	10:10	4.0	Overcast, 82°F	MW-22, upgradient	View to S.; MW-22 among pallets
2		10:15	11.0	"	MW-5, upgradient	View to E.; former bckgrd. well
3		10:30	11.0	"	MW-22, upgradient	bailing w/ SS bailer & cable
4		10:50	11.0	"	" "	collecting TOX samples; note top-valve bailer; position of bottle
5		12:40	4.0	w/in Warzyn van	Warzyn van	Millipore filter - MW-13 dissolved metals
6		2:15	8.0	Overcast, 90°	SE lagoon; E. side	red-orange stained water w/ oil & grease; black silty soils
7		2:20	8.0	"	MW-20; sampling	Note black/gray water and small volume; only 100 ml.
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						

Notices: (1) Express Time in 24 hour clock notation; (2) Focal Length is of lens used.

Signature of Photographer Valdis Jesavds

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 1, Roll 1
Location: Drum storage area.
Description: Waste oil and cleaning solvent drums.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 5, Roll 1

Location: Drum storage area.
Description: White xytal on floor near the drums.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 6, Roll 1

Location: View to the North, northwest.
Description: Waste/trash pickup area.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 2, 3, 4, Roll 1

Location:
Drum storage area.
Description:
Panorama.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 6, Roll 2

Location: Southeast lagoon; east side.
Description: Red-orange stained water with oil and grease; black silty soils

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 7, Roll 1

Location: Choline recycling area.
Description: Choline salts and drums.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 8, Roll 1

Location: Choline recycling area.
Description: Choline salts in molds.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 10, Roll 1

Location: Choline recycling area.
Description: Sump - chrome wastes.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 9, Roll 1

Location: Choline recycling area.
Description: Choline neutralization bath.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

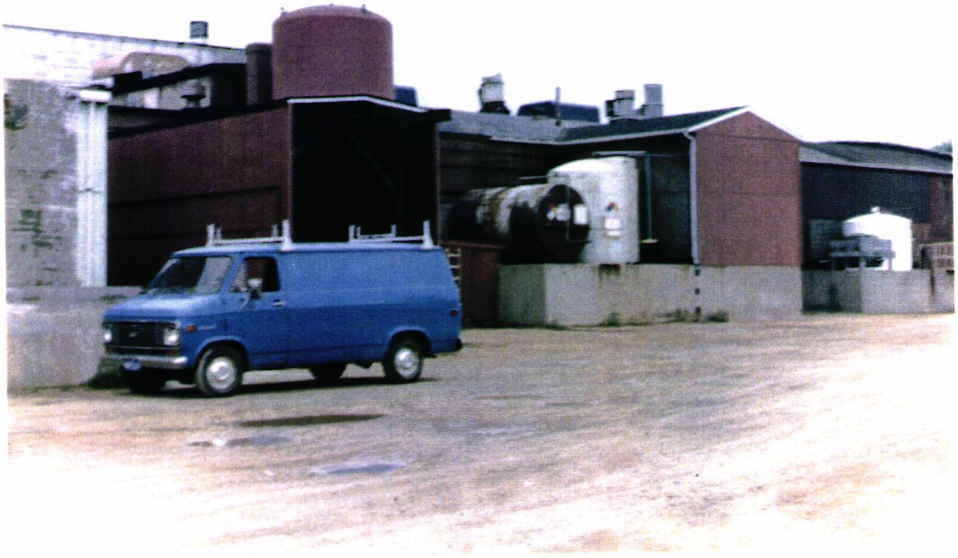
Photo 11, Roll 1

Location: Above - ground storage tanks; South view.
Description: Spent acids and cleaning solvents.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 13, 14, 15, 16, Roll 1

Location:
Settling basin near the onsite Waste water treatment plant.
Description: Panorama.



August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 12, Roll 1

Location: Above - ground storage tanks; South view.
Description: Nitric and hydrochloric acid tanks.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 17, Roll 1

Location: Former impoundments; view to the northeast.
Description: Condition of the fence around the closed impoundments.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 18, Roll 1

Location: Former impoundments; view to the northeast
Description: Condition of the fence around the closed impoundments.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

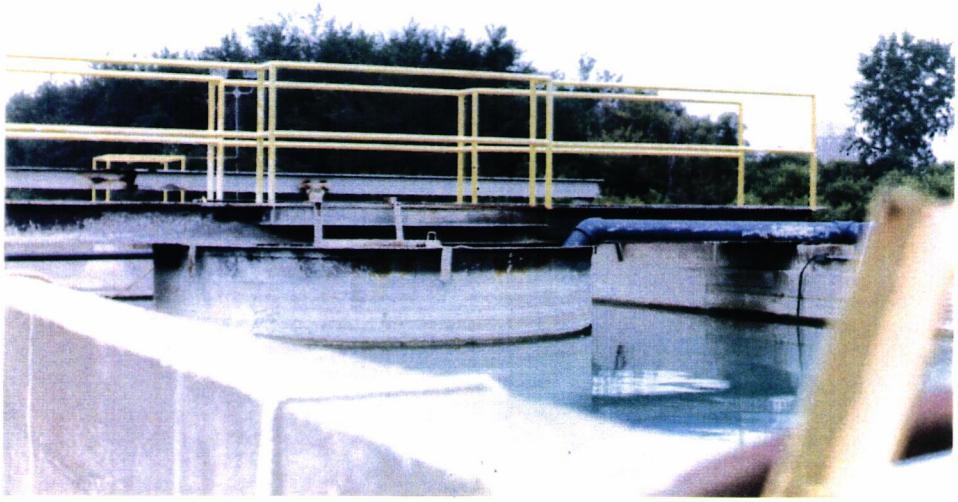
Photo 19, Roll 1

Location: Former impoundments; view to the northeast.
Description: Condition of the fence around the closed impoundments.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 20, Roll 1

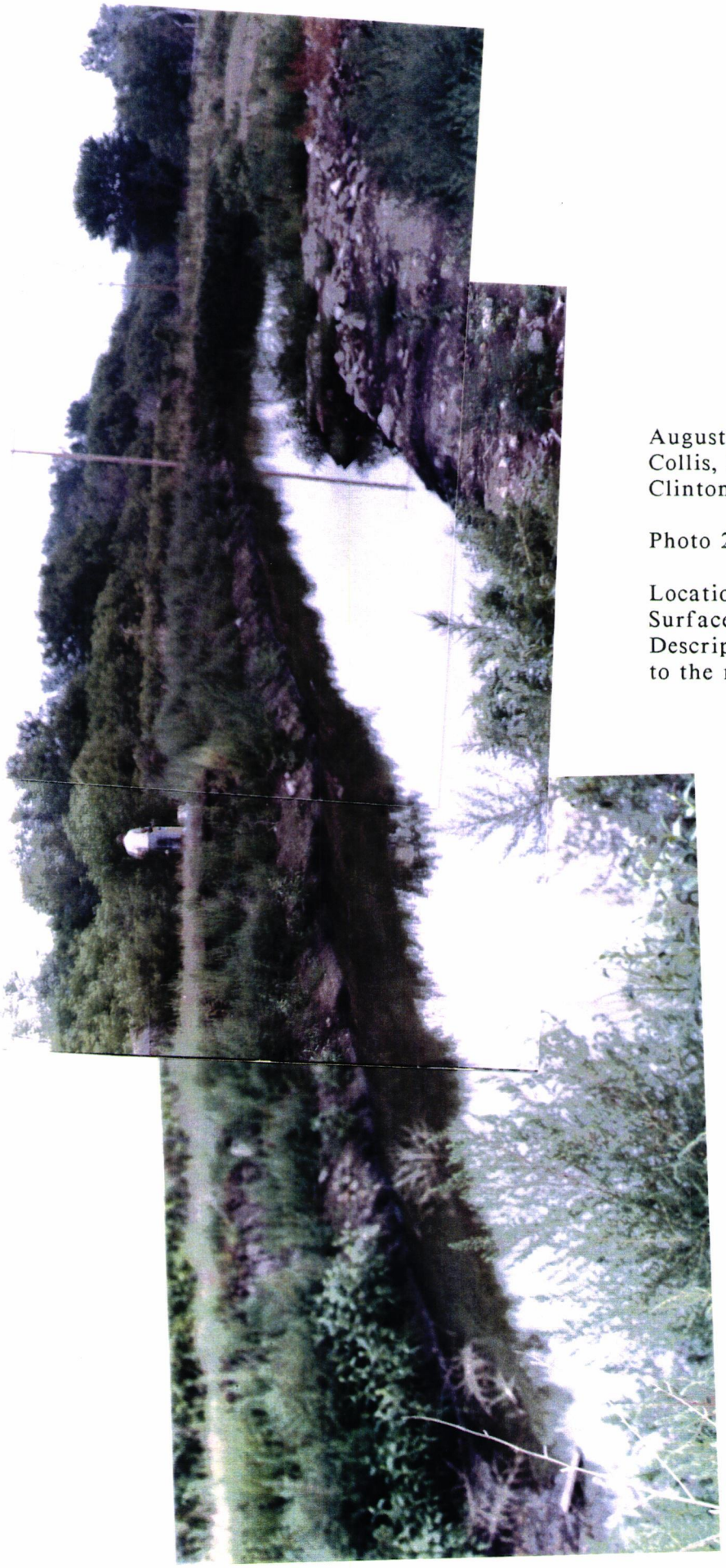
Location: Former impoundments; view to the northeast.
Description: Condition of the fence around the closed impoundments.



August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 21, Roll 1

Location: Former impoundments; view to the northeast.
Description: Condition of the fence around the closed impoundments.



August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 23, 24, 25, Roll 1

Location:
Surface impoundments.
Description: Panorama
to the northeast.

1988
Collis, Inc. CME
Clinton, Iowa

Photo 26, 27, 28, Roll 1

Location:
Surface impoundments.
Description: Panorama
to the northeast.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 22, Roll 1

Location: MW-21, north, northeast view.
Description: MW-21, west of the impoundments.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 29, Roll 1

Location: MW-13, north of the impoundment.
Description: Note nylon cord for the dedicated PVC bailer.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 30, Roll 1

Location: MW-20,
Northeast of the
impoundment.
Description: Hnu - well
head sampling.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

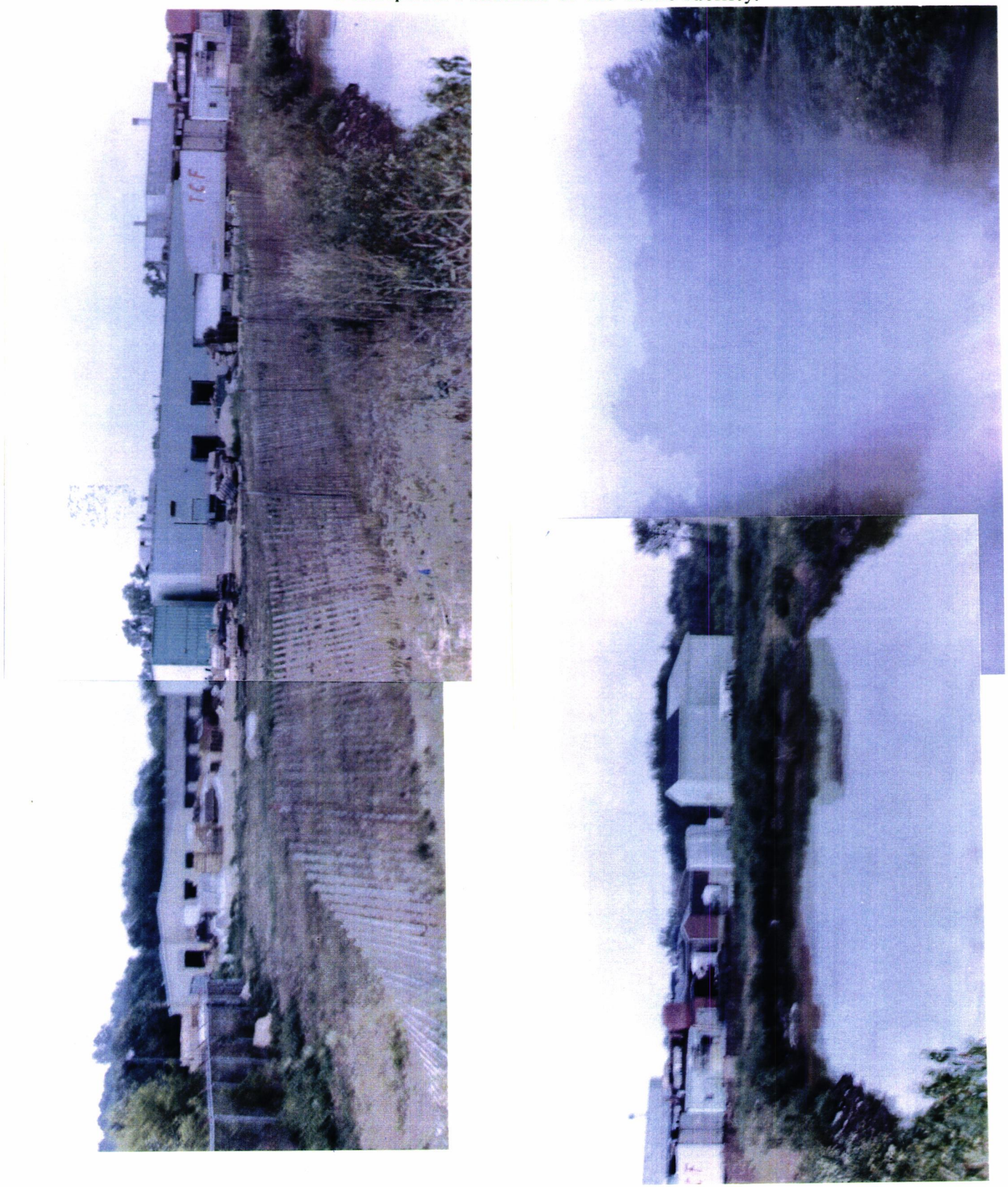
Photo 31, Roll 1

Location: MW-20,
Northeast of the
impoundment.
Description: Water level
measurement.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 32, 33, 34, 35, Roll 1

Location:
View to the south and west.
Description: Panorama of the Collis facility.



August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 1, Roll 2

Location: MW-22, upgradient.
Description: View to the south; MW-22 among the pallets.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 2, Roll 2

Location: MW-5, upgradient.
Description: View to the east; former background well.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

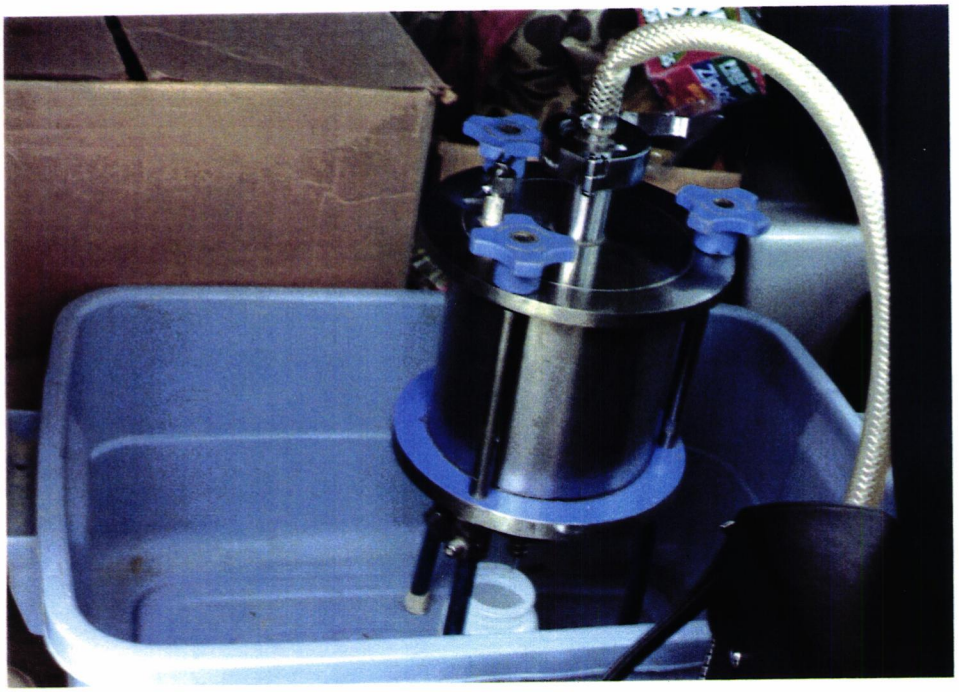
Photo 3, Roll 2

Location: MW-22, upgradient.
Description: Bailing with a stainless steel bailer and cable

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 4, Roll 2

Location: MW-22, upgradient.
Description: Collecting TOX samples; note the top-valve bailer; postion of the bottle.



August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 5, Roll 2

Location: Warzyn van.
Description: Millipore filter - MW-13 dissolved metals.

August 10, 1988
Collis, Inc. CME
Clinton, Iowa

Photo 7, Roll 2

Location: MW-20; sampling
Description: Note the black/grey water and small volume; only 100 ml.

ATTACHMENT C

INSPECTION CHECKLISTS

Attachment 3

QA/QC GROUNDWATER SAMPLING
INSPECTION CHECKLIST

Facility Name Collis, Inc. EPA I.D. NO. IAD 047037771

Facility Address 2005 South 19th Street, P.O. Box 231

Clinton, IA 52732

Facility Phone No. (319) 242-7731 Date of Inspection 8-10-88

Inspection Participants:	Name	Position Title
Facility:	Doug Smith	Plant Engineer
	Ron Street	Plating Engineer
	Bill Backus	Warzyn Engineering
State:		
EPA:	Valda Terauds	Jacobs Engineering
	Larry Phyfe	"
	DeLaine Fletcher	"

1.0 Type (s) of Waste Management Unit(s)

1.1 Surface Impoundment — Five impoundments undergoing closure

1.2 Landfill

1.3 Land Treatment Facility

2.0 Facility Groundwater Monitoring Status:

2.1	Alternate groundwater monitoring system §265.90(d)(1)	No
2.2	Indicator evaluation program §265.92	Yes
2.3	Groundwater quality assessment program §265.93(d)(1)	No
2.4	Has a groundwater quality assessment outline been prepared? §265.93(a)	No
2.5	Has a groundwater quality assessment plan been approved? §265.93(a)	No
2.6	If the facility monitoring status is 2.2, is a copy of the groundwater quality assessment outline attached to the inspection report?	No
2.7	If the facility monitoring status is 2.1 or 2.3, have the following been determined?	
	(a) the rate and extent of migration of the hazardous waste or hazardous waste constituents in the groundwater §265.93(d)(4)(i)	N/A
	(b) The concentrations of the hazardous waste or hazardous waste constituents in the groundwater §265.93(d)(4)(ii)	N/A

3.0 Purpose of sampling event: To evaluate facility's groundwater monitoring network and the procedures used to collect groundwater samples.

4.0 Facility Maps and Drawings:

4.1 Is a regional map provided showing facility location? Yes

4.2 Is a map or plan view of the facility included? Yes

4.2.1 Are regulated units and other facility components shown? Yes

4.2.2 Are waste management areas defined? Yes

4.2.3 Are monitoring wells shown? Yes

4.2.4 Are other wells in the vicinity shown? No

4.2.5 Are other exploratory borings or test pits shown? Yes

4.2.6 Are nearby surface water bodies or wetlands shown? Yes

4.2.7 Is site topography shown? Yes

5.0 Site Stratigraphy:

5.1 Have sufficient explorations been performed to define site stratigraphy? No

5.2 Are profiles and/or cross-sections provided? Yes

5.3 Have laboratory soil tests been performed? Yes

5.3.1 Sieve analyses Yes

5.3.2 Atterberg limits No

5.3.3 Soil Classifications Yes

5.3.4 Other (Specify Yes

Dry density, Water content, Cation Exchange Capacity

5.4 Are monitoring well drilling logs and/or other exploratory boring/test pit logs included? Yes

6.0 Hydrogeology:

6.1 Has the uppermost aquifer beneath the facility been defined? Yes

6.2 Describe the uppermost aquifer (texture, thickness, continuity, confined, unconfined, depth range beneath facility, etc.) Fine-grained silts and clays with trace sands are the unconsolidated sediments screened by the monitoring wells. The unconfined aquifer is 6 to 20 feet thick; the depth to water is generally 5 to 7 feet below grade in the area of the impoundments. Groundwater flow is from the southeast towards the northwest

6.3 Is more than one pressure or flow system monitored? No

6.4 Describe the other system(s) Weathered, brown to yellow-brown water-bearing limestone. Depths to bedrock range from several feet (north central and SE area of site) to nearly 120 feet (southwest corner). The upper aquifer was formed in a buried valley system separated by a bedrock ridge beneath the facility. Upward gradients of 1 to 6%

6.5 Are water table/piezometric contours included? Yes

6.6 Are water table/piezometric contours valid and adequate for determining flow directions relative to regulated units? Yes

6.7 Are water table/piezometric contours checked and modified if necessary when groundwater elevations are determined? checked; no evidence of updated maps.

6.8 Have aquifer properties been defined. Yes

6.8.1 Laboratory permeability tests No

6.8.2 In situ permeability tests Yes - slug out

6.8.3 Pump tests No

6.8.4 Hazen's approximation No

6.8.5 Other (specify) No

6.8.6 List any known values;

Alluvium: ~~K horizontal~~ = 3 to 9 $\times 10^{-7}$ cm/s
velocities = 1×10^{-2} to 1×10^{-3} ft/year

Bedrock: ~~K horizontal~~ = 3×10^{-4} to 5×10^{-5} cm/s
velocities: 100 to 500 ft/year

7.0 Monitoring Wells:

7.1 How many upgradient wells have been installed? 1

7.2 How many downgradient wells have been installed? 3

7.3 Are well construction details provided? 1 downgradient only for ~~upg~~ well (MW-13)

7.3.1 Casing material type and diameter 2" diameter Sch. 40 PVC

7.3.2 Screen material type, diameter, slot design and slot opening 2" diameter Sch. 40 PVC 0.010" slots

7.3.3 Are wells gravel packed? sand pack

7.3.4 Casing and screen joints

Threaded ✓

Solvent welded

Welded

7.3.5 Are wells screened through the full saturated intervals? Yes

7.3.6 Are wells in artesian systems screened and sealed in the confined aquifer? N/A

7.3.7 Describe backfill material in the annular spaces not gravel packed. N/A

7.3.8 Are protective surface casings with locking caps provided. Yes

7.3.9 If locking protective casings are not provided, describe well security measures: N/A

7.3.10 Describe conditions of well surface seals Well seals appeared intact; no evidence of cracking on cement apron; area between well and outer casing was dry.

7.4 Were well locations verified? Yes

7.5 Are they located as shown on facility documents? No - see Figure 2

7.6 Are surveyed reference elevations provided for each well? No

7.7 Were well depths sounded? Yes

7.7.1 List sediment accumulation thicknesses in wells that were sounded.

MW-13	None
MW-20	Slight; black to gray silt
MW-21	None
MW-22	None

7.8 Are upgradient wells located such that they will provide groundwater samples which are representative of background groundwater quality and not affected by the facility? _____

7.9 Are downgradient wells located such that they will intercept contaminants migrating from the waste management area? Yes

7.10 Are downgradient wells screened through the proper interval to intercept contaminants migrating from the waste management area? _____

7.11 Are upgradient wells constructed to monitor the same hydraulic heads as downgradient wells? Yes

8.0 Well Evacuation:

8.1 Were static water levels measured by the facility before well evacuation? Yes

8.1.1 Type of measuring device Breeder-Kelmar water level indicator/sounder

8.1.2 Was measuring device properly cleaned after each measurement? Yes

8.2 Describe well evacuation equipment and types of materials of which it is constructed including delivery lines or lines used to lower equipment into the well. Dedicated PVC bailer w/nylon rope used to evacuate MW-13; stainless steel bailers with steel cable were used to evacuate MW-20, -21, and -22. MW-21 had a dedicated bailer; the second bailer was alternated between MW-20 and -22.

8.3 Were wells completely evacuated? Yes

8.4 How many time were wells evacuated? Once

8.5 Intake position in wells not completely evacuated.

Top of Screen N/A

Middle of Screen

Bottom of Screen

8.6 Number of well casing volumes evacuated.

MW-13 1.09

MW-20 0.86 - 1.24

MW-21 3.97

MW-22 3.3

8.7 Describe methods used to determine volumes evacuated.

Facility used the following formula: $\pi r^2 l \times {}^{\#gal}/_{ft^3} = \#$ gal. per well volume

r^2 = radius of well (in feet)

l = height of water column in the well (in feet)

8.8 Describe procedures for collection, Management and disposal of evacuated water.

Evacuated waters collected in uncalibrated plastic bucket and discharged to the ground surface in the vicinity of the well evacuated.

8.9 Does each well have dedicated evacuation equipment?

No, only MW-13

8.10 Describe cleaning and decontamination procedure for equipment used in more than one well.

Washed in Alconox solution

Rinsed in potable water

Double-rinsed in deionized water

8.11 Describe physical properties of evacuated water.

Well No.	MW-13	MW-20	MW-21	MW-22		
Color	Clear	Black to Dark Gray	Slightly Cloudy	Slightly Cloudy		
Odor	None	None	None	None		
Turbidity	Low	Moderate	Low	Low		
oil or grease	None	None	None	None		

9.0 Sample Withdrawal:

9.1 Were wells allowed to fully recover before sample withdrawal? No

9.2 Describe sampling devices and types of materials of which they are constructed, including delivery lines and lines used to lower equipment into the wells. Stainless steel bailers with steel cables were used to ~~lower~~ obtain water samples.

9.3 Depths from which samples were recovered.

MW-13	Bottom
MW-20	Not sampled - insufficient volume
MW-21	Bottom
MW-22	Bottom

9.4 Does each well have a dedicated sampling device? No, MW-22 and -20 shared a stainless steel bailer.

9.5 Describe cleaning and decontamination procedures for equipment used in more than one well. Alconox solution wash; Potable water rinse; Deionized water rinse

9.6 Were samples withdrawn and collected to minimize absorption, aeration, agitation and volatilization? No

9.7 If not, describe procedure. Top-discharging bailer and successive bailer volumes were used to fill TOX and TOC containers. TOC samples were field filtered

9.8 Describe physical properties of samples

Well No.	MW-13	MW-20	MW-21	MW-22		
Color	Clear	NS	Clear	Slightly Cloudy		
Odor	None	NS	None	None		
Turbidity	Very Low	NS	Low	Low		
Oil or Grease	None	NS	None	None		

9.9 Is a copy of the sampling and analysis plan provided? Yes

9.10 If not, explain

9.11 Were any parameters measured in the field by the facility? Yes - but not at the well head

9.12 If so, list the values obtained.

Well No.	MW-13	MW-20	MW-21	MW-22		
pH	7.2	~~UK~~ NS	UK*	UK		
Conductivity	800	~~UK~~ NS	UK	UK		
Temperature	23.6°C	~~UK~~ NS	UK	UK		

* field notes could not be obtained from consultant.

9.12.1 Were any other in situ or field analyses performed? No

9.12.2 If so, list the additional measurements performed.

N/A

9.13 Describe the monitoring equipment used for each of the field measurements:

pH — Beckman pH/Temperature meter

Temperature — " "

Specific Conductance — YSI Model 30

Redox Potential — N/A

Dissolved Oxygen — N/A

Turbidity — N/A

Other (specify) — Filtration apparatus: Millipore w/ 0.45 μ filters

9.13.1 Is the monitoring equipment calibrated and maintained in accordance with the manufacturer's procedures and consistent with accepted procedures (e.g., SW-846)? Yes

9.13.2 Is a record maintained to document the accomplishment of calibration and/or maintenance? Yes

9.14 In what sequence were the wells sampled? MW-22*, MW-13, MW-21* (MW-20 not sampled due to poor recharge)

* samples taken alternately following initial sequence due to poor recharge characteristics

10.0 Sample Collection

10.1 Was care taken to avoid placing clean sampling equipment on the ground or any other potentially contaminated surface prior to use? Yes

10.2 Were the sample containers for each parameter to be analyzed compatible and consistent with current approved guidance? No

10.2.1 Were the containers cleaned prior to use? pre-cleaned containers used

10.2.2 If precleaned, describe the procedures:

Unknown; containers provided by Warren laboratory

10.2.3 Were the sample containers for bacteria samples sterilized prior to use? N/A

10.3 Were samples transferred directly from the sampling device to the appropriate sample containers? Yes - TOX
No - other parameters

10.3.1 Describe the procedures used to prepare a sample consisting of more than one aliquot? N/A

10.3.2 Were the samples for dissolved metals filtered through a 0.45 micron filter? Yes

10.3.3 Were the samples for volatile organics placed in appropriate vials to eliminate any air being entrapped in the sample? Yes

10.3.4 Did the pour up procedures result in obtaining representative samples? No

10.4 What procedures were used to obtain split or duplicate samples for comparative analyses? Successive sampling was employed to obtain split samples for the EPA.

10.5 List the sample containers and preservation procedures used by the facility for each parameter or group of parameters to be analyzed:

Parameter/Group	Sample Container	Preservation
Metals, diss (Fe, Mn, Na)	250 ml polyethylene	filtered, HNO_3, iced
TOX	1-L amber glass	iced, no headspace
TOC	250 ml. polyurethane	filtered, H_2SO_4, iced
Phenols	500 ml. glass	iced, H_2SO_4
Sulfate & Chloride	1-L polyethylene	filtered, iced

11.0 Sample Preservation and Handling

11.1 Were the samples preserved in accordance with current EPA approved procedures? No

11.1.1 If not, what preservation procedures were used?

TOC / cations were filtered using a Millipore 45μ filtration apparatus; conflicted with facility's sampling plan.

11.1.2 From what information sources were the alternate preservation techniques derived?

None given

11.2 Was chain of custody maintained on all samples collected? Yes

11.2.1 Was a written record of sample custody established and maintained? Yes

11.2.2 Does the written record provide enough information to accurately document the transfer of sample possession from the time of collection through laboratory analyses? Unknown

11.2.3 Do the procedures assure that the samples cannot be tampered with prior to analysis? Unknown

11.3 Were the samples marked/labelled appropriately? Yes

11.3.1 Was a unique sample identification number assigned to each sample? Yes

11.3.2 Did the sample labels/tags/markings remain legible even when wet? Yes

11.4 Is a field log book established and maintained to document each sampling event? No - field sheets used

11.4.1 Does the log book document the following information?

- Identification of well(s) Yes
- Well depth Yes
- Static water level depth and measurement technique Yes
- Presence of immiscible layer and detection method No
- Well yield - high or low Yes
- Collection method for immiscible layers and sample identification numbers No
- Well evacuation procedures/equipment Yes
- Sample withdrawal procedures/equipment Yes
- Date and time of well evacuation/sample collection Yes
- Well sampling sequence Yes
- Types of sample containers used and sample identification numbers No/Yes
- Preservatives used No
- Parameters requested for analyses No

° Field analyses methods and results Yes

° Sample distribution and transporter No

° Field observations during sampling event Yes

° Name(s) of sample collector(s) Yes

11.4.2 Who retains the field log book? Warzyn Engineering

11.5 If the samples are analyzed by an on-site laboratory,

11.5.1 How are the samples held prior to analyses; i.e., refrigerated, secured, etc.? N/A

11.5.2 How long are the samples held prior to transport to laboratory/analyses? N/A

11.5.3 Are there established procedures for safeguarding the samples prior to analyses? N/A

11.5.4 Are there records maintained to show when the laboratory received the samples and when the analyses were initiated/completed? N/A

11.6 If the samples are analyzed by an off-site/private laboratory,

11.6.1 How long are the samples held prior to transport or shipment to the laboratory? overnight

11.6.2 How are the samples held prior to transport or shipment; i.e., refrigerated, secured? placed in an iced cooler in custody of sampler

11.6.3 How are the samples transported/shipped? by sampler

11.6.4 Are there records maintained to show when the samples

were shipped? Yes

were received by the laboratory? Yes

were analyzed? unknown

11.6.5 What procedures are used to provide chain of custody of the samples during transport/shipment?

Chain of custody form

11.6.6 List the name,address and telephone number for the off-site laboratory: Warzyn Engineering

One Science Court, P.O. Box 5385

University Research Park

Madison, Wisconsin 53705

(608) 273-0440

12.0 Quality assurance/quality control (QA/QC)

12.1 For detection monitoring, are at least four replicate analyses obtained for each indicator parameter (pH, specific conductance, TOC, and TOX) on each sample? No

12.2 Are all samples analyzed using an EPA-approved analytical method for each parameter? Unknown

12.2.1 If an alternate analytical method is used, list the method and source document.

UK

12.2.2 Is the analytical method used for each parameter documented (reported with the analytical results, contained in the sampling and analysis plan)? UK

12.3 Are samples analyzed within specified holding times? UK

12.4 Are appropriate QC samples (field blanks, duplicates, reagent blanks) included with the field samples? No, only equipment blank

12.5 Are appropriate QA provisions included in the laboratory operations? UK

12.5.1 Are adequate records maintained? UK

12.5.2 Does it include appropriate statistical methods? UK

12.6 Does the QA/QC program assure the validity and reliability of the laboratory and field data generated? UK

12.7 Does the sampling and analysis plan for the facility adequately address sample collection, sample preservation and shipment, analytical procedures, and chain of custody? Yes

13.0 Site Evaluation:

13.1 Describe any evidence of leakage.

Drum storage areas untidy; white crystalline powder observed on floor at one location.

13.2 Describe any evidence of seepage.

Impoundments undergoing closure evident as three lagoons into which groundwater has seeped. Stressed vegetation at base of berm may be an indication of seepage. Discolored soils and surface water staining were also noted in the lagoons.

13.3 Describe any evidence of surface impoundment overtopping.

None observed; drought conditions.

13.4 Describe any vegetation stress. Brown and dead vegetation (small bushes and weeds) at or near the approximate elevation of surface water in the lagoons and in areas around the berm

13.5 Describe any excessive erosion. None observed

13.6 Describe any imminent or actual slope failures.

None observed.

13.7 Describe any apparent degradation of surface waters.

Algal bloom on west end of northern lagoon
Red-orange staining and oily sheens on water surface in both southern lagoons (see photographs)

ATTACHMENT D

FIELD LOGBOOKS

Collis, Inc. CME
Work Assignment No. 846

August 10, 1988

Ron Street, Doug Smith - Clinton, Ia, Collis, Inc.

0810: Arrived at facility with Valda Skrauds and Jerry Ahyfe.

Valda discussed sampling plan:

- ✓ calculations for evacuation
- ✓ specify ~~DFT~~ bailer or pumps
- ✓ water dumped on ground - maybe should go to WWTP on site.
- ✓ consistency re: when sampling after purging.

Well #22 - 7 ft deep } all shallow wells.
13 - 20 ft deep }

Wells recover slowly and will purge completely dry. Will not get 3 volumes since the wells dry up.

Collis usually splits samples also, but will not sample if there is not enough volume.

Have a deep well on site for process water - 160 ft. deep.

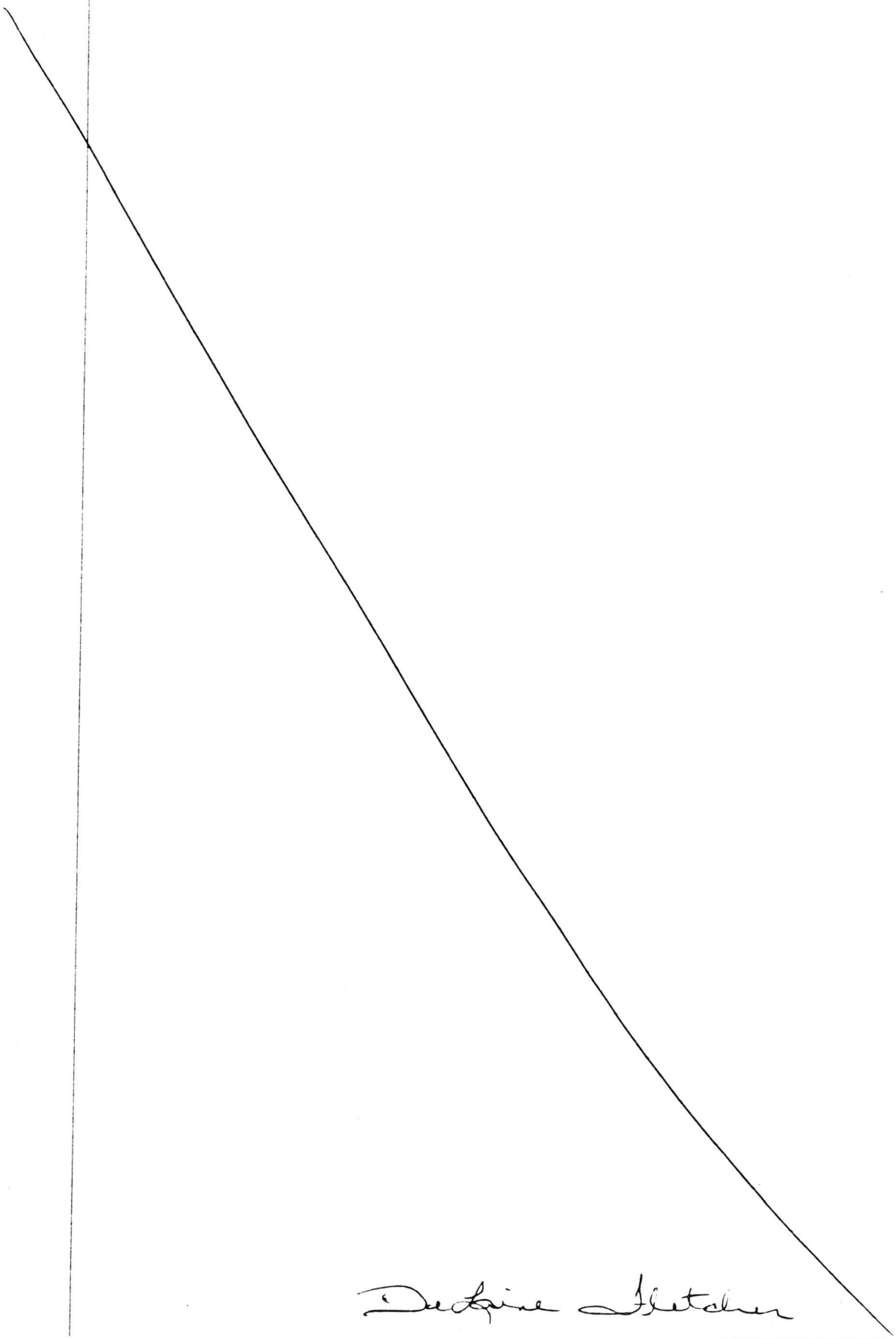
(Background ~~H~~ reading is 0.0.

0900:

Well #~~22~~13: ~~DFT~~ H reading of headspace ~~after~~ immediately after top is taken off - background.

8.46' from TOC (PVC) - Valgyn reading.

Dolores Fletcher


Dedrine Fletcher

Jacobi's water level indicator doesn't work, so won't be able to get verification.
TD = 22.6' from TOC (PVC).

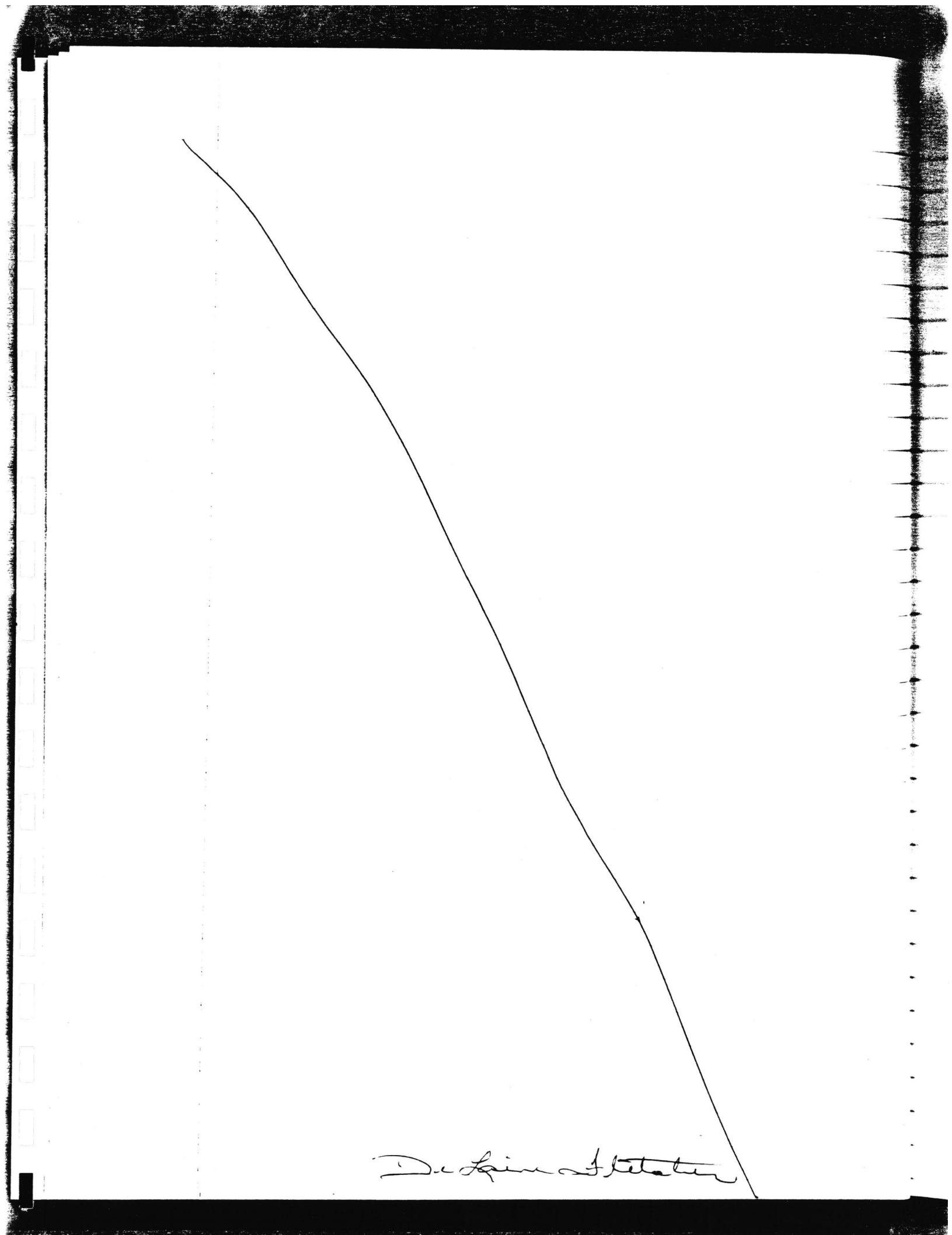
Evacuation: 22.6' - 8.46 = 14 ~~ft~~ ft
0.16
14 x ~~1.5~~ = 2.24 x 3 = 6.9 purge volume
$(l)(r^2)(0.1606)$ = gal/linear ft.

Well #13 is a 2" well.

Well #~~21~~ 2': no headspace reading above background.
Water level 6.19' TOC (PVC)
TD 10.02' TOC (PVC)
Always measure from top of PVC casing if cut cut crooked, measurement is from highest point on casing
10 - 6 = 4 ft water x 0.16 (area of circle) πr^2 0.8 ft, = ~~1~~ gal

Using stainless steel bailer w/ stainless steel cable + pour water into bucket.
Water appears clear. Putting plastic on ground to protect cable on ground and to keep drips off ground.
Water is clear, slight ~~turbidity~~, no silt.
0925: Evacuated 2.5 gallons.
Water is poured on ground.

Dorraine Hotchkiss.



Use Liquinox (dilute) to decon, then rinse w/ deionized water).

Well #21: EC = 2000 u
pH = 6.5
Temp = 18°C

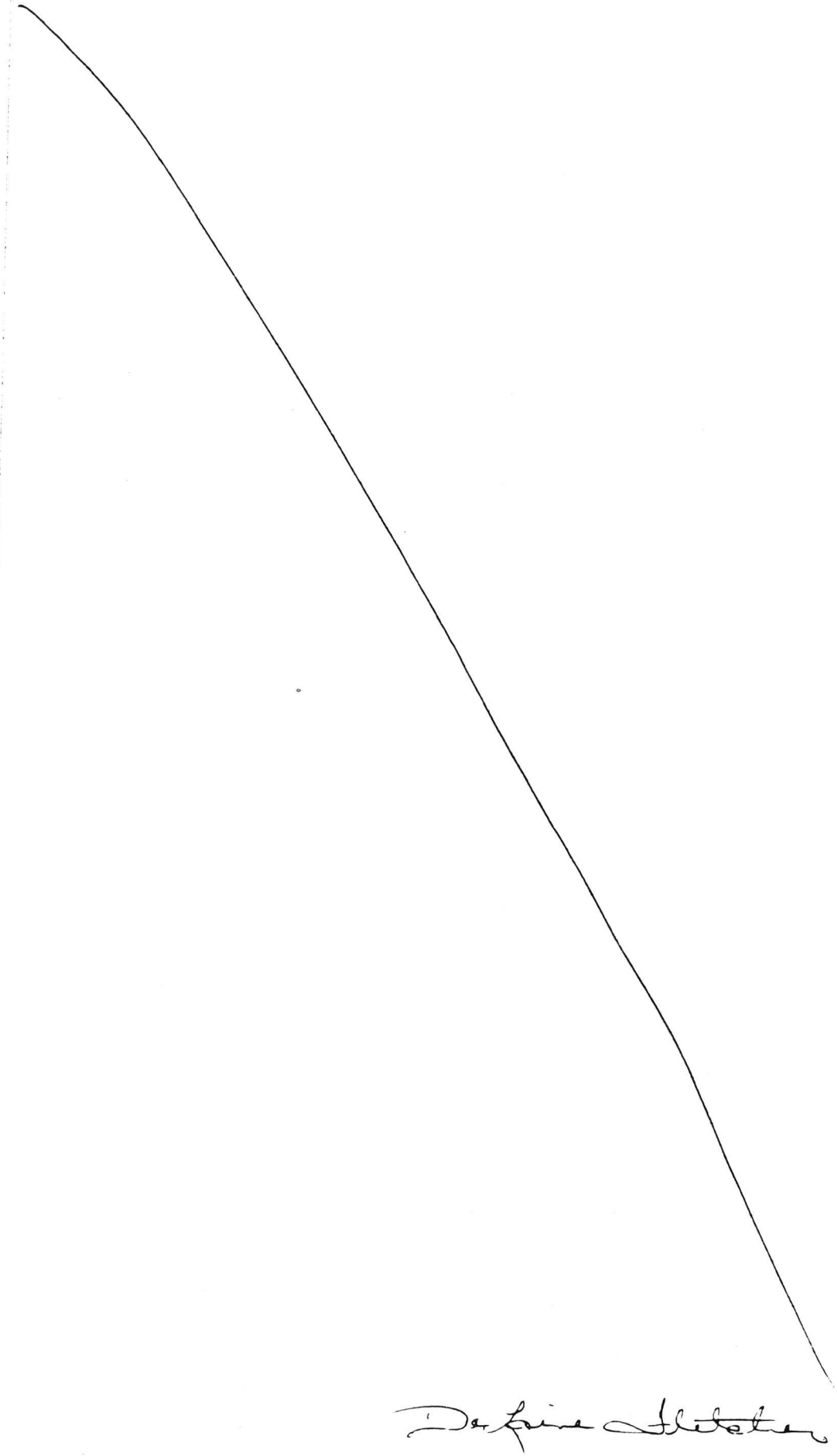
Well #MW13: Evacuated 2.5 gallons. (1 well volume).
Well #13 was evacuated w/ a dedicated PVC bailer w/ nylon rope.

Well #21: Water level at 8.95' at 0940 (15 minutes recharge time).

MW20: Home background.
Water level = 8.01 TOC (PVC)
TD = 11.6 TOC (PVC)
Evacuation volume = 0.84 gallons

Clasp on stainless steel bailer and SS cable is galvanized.
0950: Begins evacuation of MW 20.
Water is black, doesn't appear to be silty, but may be from silt coming in through filter.
Evacuated 1 gallon. Very ~~little~~ slow recharge.
Leaving bailer in well for another evacuation. (0955)

Dustin Fletcher



Washing off water level meter and also the cable is rinsed as it is in the wells. It is rinsed w/ the soapy water and then w/ water.

1005:

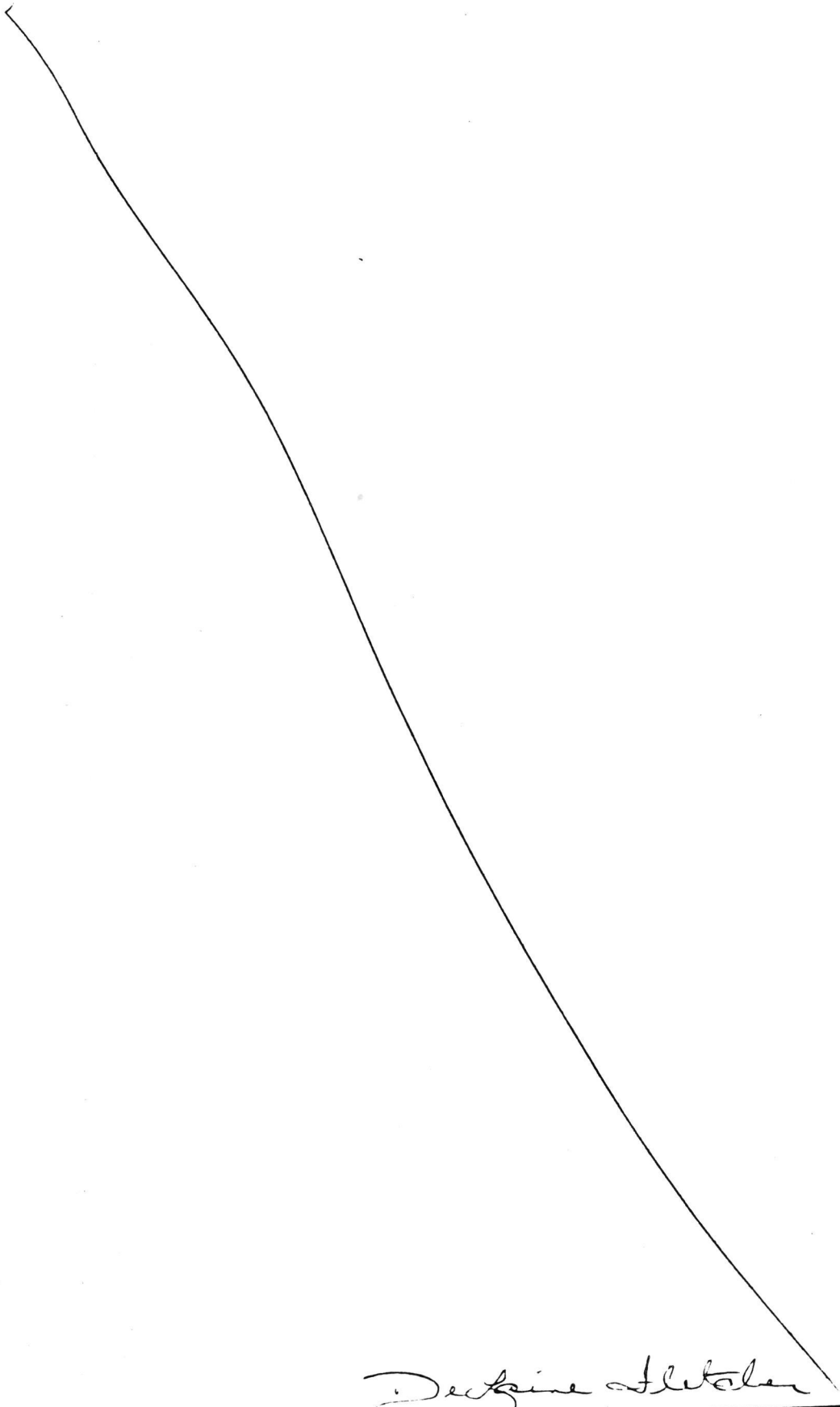
MW 22: H-no reading is background.
Water level - 6.93 TOC (PVC)
TD: 8.75 (TOC PVC)
Well volume = 0.32
Water appears clear, very slightly turbid.
No oily appearance.

Wanyin doing:

1035: Doing pH - Beckman 10,
YSI 33 meter for SC,
doing temp conversation w/ pH + SC.
taking 4 measurements. Quadruplicates.
Will be analyzing for TOX, TOC quadruplicate
Chlorides, sulfate - filter + not preserve
metals (Fe, sodium, TMN) - filter (dissolved)
TOC filter + preserve w/ sulfuric
phenols - unfiltered, preserve w/ sulfuric
TOX - unpreserved, unfiltered, no head space.
Preserved also w/ ice. (Packed).

Beginning sampling time: 1050. Taking TOX first.
Wanyin using millicare filtering device.
Using 0.45 micron filter; (YT 30142 HW) - catalog # for filtering device.

Dwayne Fletcher

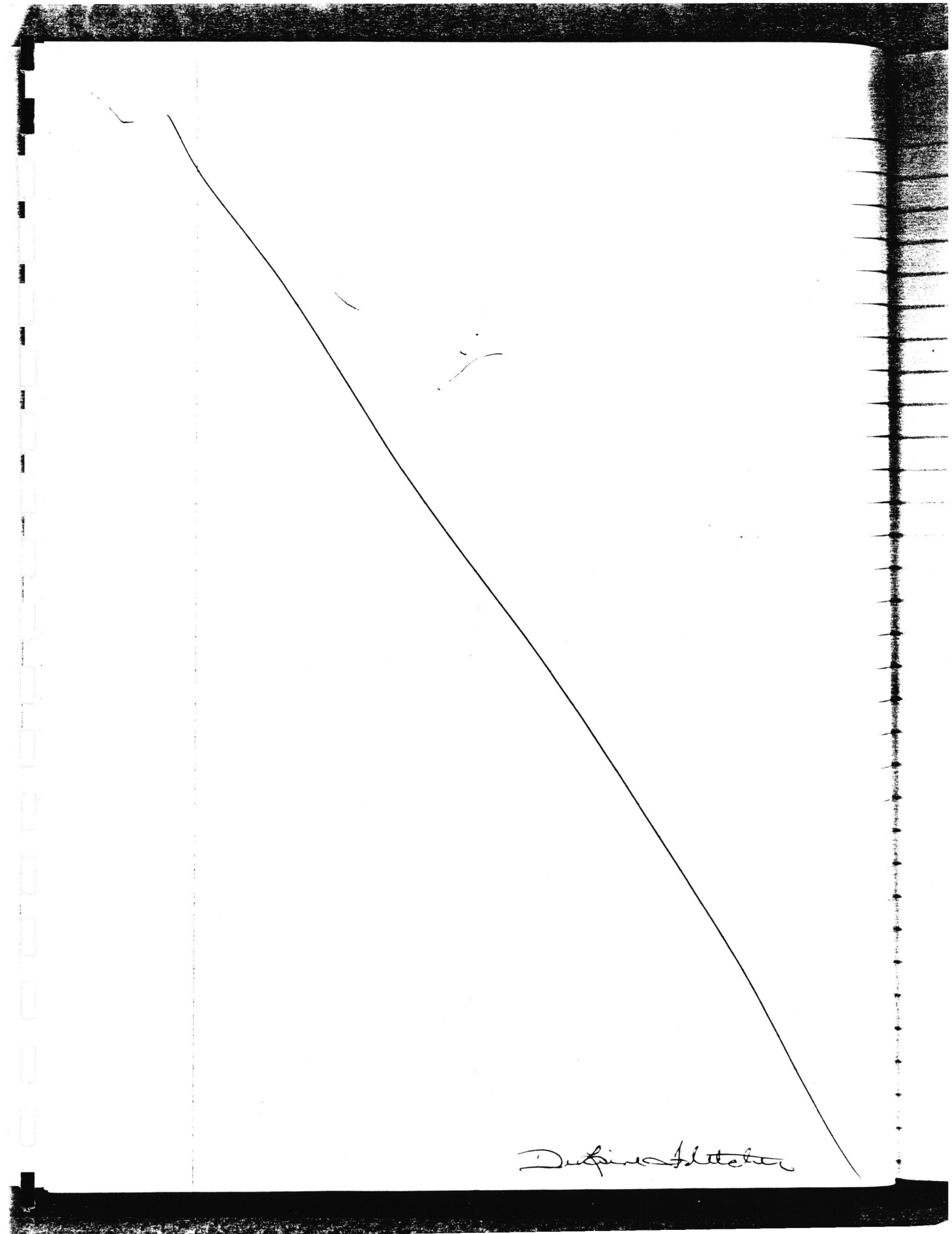


1645: Collecting EPA's Phenols, since Waryga collected their phenols when Jacobs was gone making phone calls.

Waryga is leaving without having collected Jacobs split for nitrates, fluoride, chloride, sulfate, nitrogen & out of well #21, although they ~~see~~ collected their samples out of that well.
Also, Waryga did not collect all their samples for the background well, only TOX. They are leaving 2 stainless steel ~~wells~~ bailers, one for well #21 and one for background, so that Jacobs can continue sampling for analysis gathering. Only one stainless steel ~~bailer~~ will be left, so Jacobs will buy a new nylon rope to use in the other well, even though it deviates from the normal sampling procedures. The nylon rope will at least remove the possibility of cross-contamination by Jacobs of the two wells left here.

1710: Exit conference with Doug Smith, Bill Backus, Valda Jerauds, Kathy Phyfe and DeAnne Fletcher.
Valda lists some deficiencies noted during the inspection.

DeAnne Fletcher



Any of Warzyn's work: call Doug Dalbrach. Warzyn is doing the analysis in Madison, Wisconsin,

Bill (w/ Warzyn) will not submit any information without having the info released through the client.

October 24 - Round 6 - contamination indicators for all the wells, not a full scan.

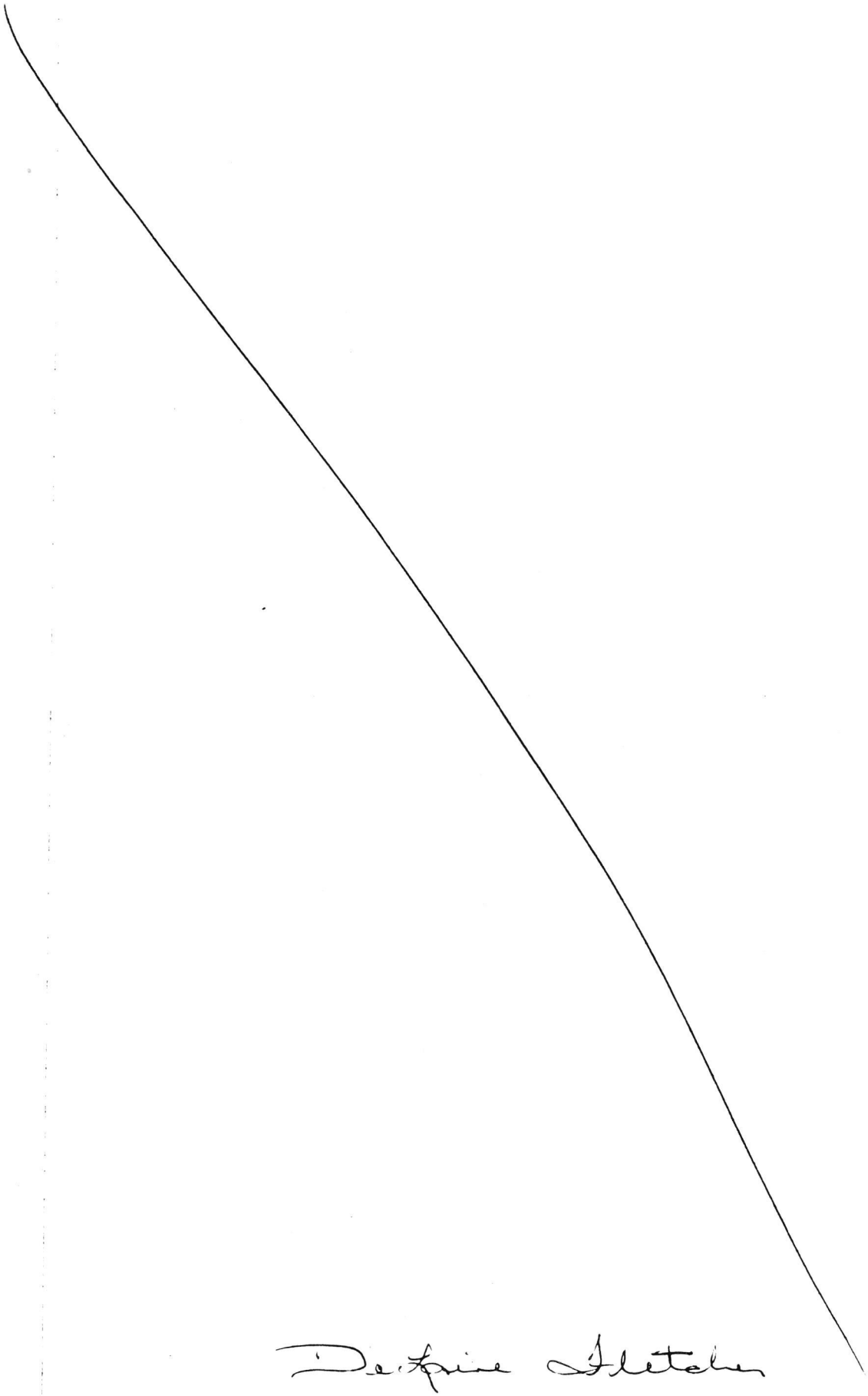
1755: Jacobs leaves site, planning to come back at 8:30 (2030) to collect more sample.

2000: Jacobs arrives back at site.
2000: Collecting sulfate sample from MW21.

Filter pack is coming through screen and collecting in sample and in bailer at MW21. Appears to be more sand than was in Warzyn's sample.
2005: Sampling nitrogen, nitrate + phosphorus from MW21.

2020: Collected TOC sample from MW22.
2025: " phenol " " "
2035: " dissolved metals " "
2035: " ½ total metals " " "

2040: Jacobs leaves site to allow well time to ~~set~~ recharge. - Dr. Kaine Fletcher


Delphine Fletcher

August 11, 1988

0005: Jacobs arrived at site and begin to sample well #22.
0018: Finish with sample for total metals.
0022: Sampled nitrates, nitrogen + phosphorus from MW22.
0035: Sampled fluoride, chloride, turbidity from MW21.
0045: Jacobs leave site.

0558: Jacobs arrives at site.

0605: Collected sulfate, fluoride, chloride, turb. from MW22.
0710: Had Doug Smith sign receipt for samples + take copies of COC and Jacobs leaves facility.

0915: Jacobs delivers samples to the Iowa Hygienic Laboratory.

Dorothy Fletcher

9-10-88 L. Pluff

Initial Conference:
Waygn & Collis Inc
0800 V. Tillands asks for completion information on wells -
Need over inspection details etc...
Comments on sampling plan ... procedures for well evacuation discussed.
Wells were historically slow producers - 3BV criteria may not be met.
- Approach may be to initially purge one casing vol. and follow up by sampling immediately thereafter

Volume needed for Waygn ≈ 3 liters
0830-0857 Prepare equipment - WL device, pH, Ec etc...
B.11 Barnes of Waygn sets up on well #-
D. Fletcher & L. Pluff will make Head space measurements with HNU -

- Waygn will use $(\ell)(6^2)(0.160)$ to get bore volume...

0900 Measured static in MW-28 8.48' below reference pt. (TOC). Waygn calculates 2.3 gal/casing vol. or 6.9 = 3BV's HNU = background.
TD = 22.6'

$\left(\frac{d}{2}\right)^2 \pi (h_1 - h_2)$ = gal cu ft. x 7.48 gal/ft³ = gal/BV

0918 Delane & Bill measure static in MW-21 @ 6.19
HNU = background

$\left(\frac{.167}{2}\right)^2 \pi (22.60 - 8.48) = 0.309\ ft^3$ -

2.3 gal/BV or 6.9 = 3BV's

0920 Verify location of MW-21 with respect to ~~building~~ - utility box - 11.5'

2.5 gal removed = 3BV's

MW-21 Static = 6.19 TD = 10.02

Begin purging MW-21 - water fairly clear - slightly turbid - Stainless bailer used by Wayne

$\left(\frac{.167}{2}\right)^2 \pi (10.02 - 6.19) = 0.084\ ft^3$

1BV = 0.63 gal 3BV = 1.8 gal

MW-21 Specific Conductance = 2000 uMoks
Temp = 18C°
pH = 6.5

0940 Begin purging MW-13 - bailed dry -

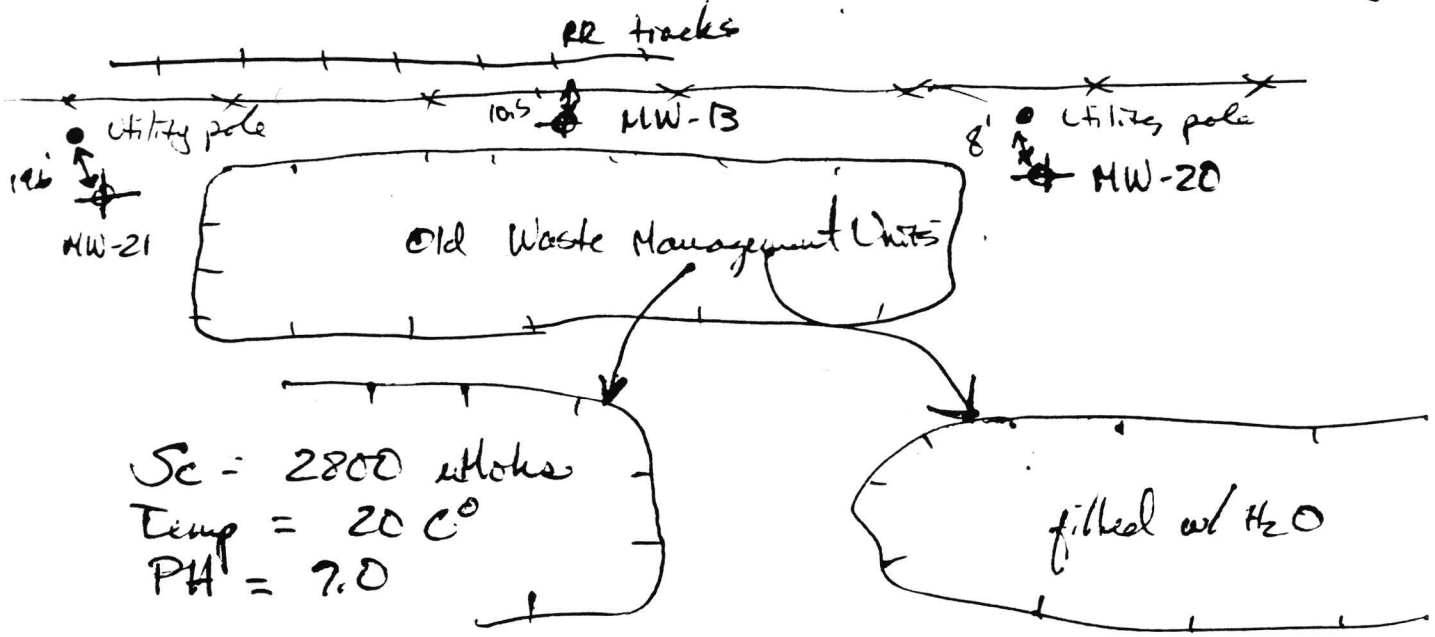
Parameters: SC = 600 uMohs
Temp = 15 C°
PH = 7.8

0949 Delaney & Valdez proceed to MW-20
HNU = background
Static = 8.01
T.D. = 11.6

$\left(\frac{.167}{2}\right)^2 \pi (11.6 - 8.01) = 0.079$

$0.079\ ft^3 \times 7.48\ gal/ft^3 = 0.58\ gal$
3BV's = 1.77 gal

MW-20, Water is black - highly turbid - some sediment... ≈ 1/2 to 3/4 gal removed. Pulled dry.



1005 Delane and Valdez Proceed with Waryyn to
MW-22 pH = 6.9 Temp = 22C°
HNU = background (Septic) - Ec = .2200 uMohs

Well construction materials - all wells are schedule 40 PVC with flush joints and protective (steel.) casings. All are equiped with hinged caps and locks.

	Stick up	Cement Apron	Reference pt.
MW-21	23"	yes	19.6' from pole
MW-13	34 1/2"	yes	10.5' from fence
MW-20	26"	yes	8' from util. pole
MW-22	17"	yes	—

For MW-20
Static = 6.93
T.D. = 8.75

$\left(\frac{16.7}{2}\right)^2 \pi (8.75 - 6.93) = 0.04$
$= 0.298$ gal / BV

1030 ≈ 1 gal removed (Sl. turbid). 3BV's = 0.895

TE

1035 Begin bottle preparation: Warzyn elects to begin organic collection 1st from MW-20 upgradient well...

Temp, pH and Ec will be taken in quadruplicate as per the QAPP...

MW-20	pH	Ec (uMoh)	Temp (C°)
1)			
2)			
3)			
4)			

Sampling team - Delane Fletcher, Valda Ferands, L. Phyfe and Bill Bacus (Warzyn).

1047 Begin sample collection... organic (TOX and TOC) sampled first. Bailer emptied directly into sample containers... Bill tries not to agitate sample - somewhat unavoidable.

L. Phyfe leaves for tape, buoys etc...

1115 Return - Plan now is to sample what ever well has recharged sufficiently to provide a sample.

1145 Measured static in MW-21 has only come up a couple of feet.

1209 Proceed to MW-13 - will collect organics 1st we may have to cut back on vol. for the organics due to the slowly yielding wells.

1215 Collected TOX from MW-13...

1230 Collected TOC's from " "
Collected duplicate and other parameters...

1245 perform filtration w/ 0.45u filter capsules...
for dissolved metals...

	①	②	③	④
pH =	7.2	7.2	7.2	7.2
Temp =	19C°,	22C°	22°C	22°C
Ec =	650 uMohs	650	650	650

1300 Filtration complete

Final measurements: 15°C = temp
pH = 7.3 Ec = 600 uMohs

1326 Checked static H_2O in MW-21 - was 8.30 from TOC. Approx 1.3' lower than initial static this AM. Waygyn wants water level as near to initial static as possible prior to sampling.

1504 Obtained TOC's and total metals before bailing MW-21 dry.
Water was fairly clear - slightly turbid.

1425 Went to MW-20 - only 100 ml of recovery since pulling dry @ 1000. May not be able to sample this one.

TE

1441 Checked MW-22 : only 150 ml of recovery - another slow one - Bill wants to call her project manager

1545 Phone calls to lab etc... Delaney Volda Back at site - Waleyn wants to call it quits try again another time.
Bill cleans equipment - we collect our equipment rinsate sample.

1604 Collect equipment blank - same order as before....
Prepare & acidify those samples in need...
Package samples...

1645 Back over @ MW-21 - collect 1 l additional for phenols...
Filter & collect - dissolved metals (0.45 u)

Issues / Recommendations

- Field water quality parameters should be made at well head during evacuation.
- All equipment should be dedicated - steel cables and stainless buckets.
- Quadreplicate field parameters should be taken.
- Due to low yield wells - a graduated bucket or some other container should be used to more accurately record water volumes purged.

- TOCs : filtered? & in polyethelene bottles?
(check FEGD)

1703 Bill finishes his sample preparation - he will leave behind one cable and two stainless steel bailers for us (JEG) to complete sampling of MW-21 and the upgradient well MW-22.

Ex-7 Conference

- Access for remainder of well evacuation

Issues on previous page covered.

COLLIS CME

Initial Conference: 8:00 a.m. 8-10-88

Doug Smith - Collis, Plant Engineer — Larry Phyfe JEG
Ron Street - Plating foraman — DeLaine Fletcher JEG
Bill Backus - Warzyn — Valda Tarauds JEG

- Explained CME process: Audit - done today
  TA - technical evaluation of site hydrology

Focus: observe/document facility's sampling obtain audit measurements & split samples

- Whether or not wells will recover quickly to get enough sample volume. Facility may want to take split as well - (not as important as Warzyns and EPAs) if wells won't produce

- Deep well onsite 160' deep - process waters for the facility. Will send info w/ other well construction information (MW-20, -21, -22)

- Requested information on well construction be sent to Harry Gebbert, U.S. EPA Region VII. DeLaine provided address

- Suggest facility containerize purged waters in future & add to onsite WWTP rather than dispose of H_2O on the ground.

- Perform general site evaluation in conjunction with pre-sampling activities

Valda Tarauds
8.10.88

6:30 Facility Tour / General Site Evaluation - Doug Smith
Noted areas to be cleaned prior to upcoming VSI.

SWMU #1 Drums - waste oil
cleaning chemicals
Area generally untidy - possible storage of incompatibles

SWMU #2 Drums - electroplating
choline salt - corrosive
paint lacquer & thinner
Salts on floor - other potential spills

Process area: Lacquer bath w/ lacquer drums w/in facility

SWMU #3 Drum storage - drums of unknowns 4 5 yrs. old.
Choline recycling
Neutralization bath pH - 8-9
SO_2 treatment - chrome wastes
goes to settling pond / WWT plant

SWMU #4 Spent acid & cleaner above-grd tanks.

Nitric & Hydrochloric acid above-grd tanks

Water treatment area
Filter = Diatomaceous earth.
Settling basin 28' deep 200,000 gal.
Spent filters material run through filter press
then filter is hauled to sanitary landfill.
Only concern is zinc (according to Collis).
Water tested 3x per day at settling tank
filter effluent
discharge to Mfr. Ditch

Site Evaluation concluded 9:25

Vicki Mowdy
8-10-88

Photo Log

General Site Evaluation Photos

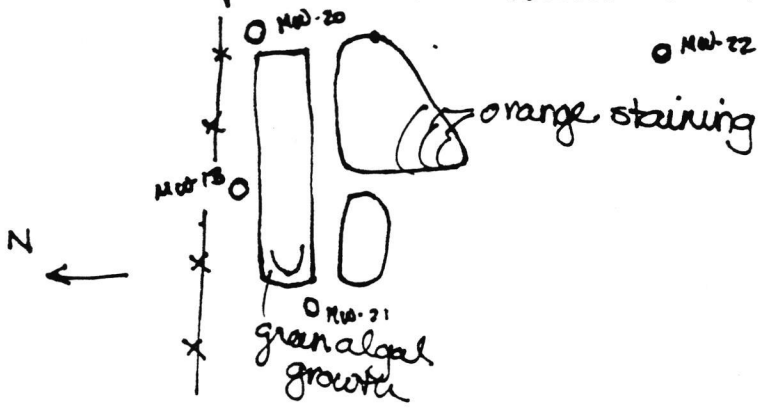
Roll #1

Frame No.	Description	F stop	Distance	Location/Bearing
1-4	Drum storage area	F 1.8	~20'	Inside facility
5	"	"	"	"
6	Waste/trash area	F 11	~	North view
7-9	Chlorine recycling area	F 4	20'	in facility
10-16	Above-grd storage tanks & water treatment building	F 4	~	S to N.
17-20	Former surface impoundments (grassy area)	F-5.6	~	N to E
21	Settling basin - treatment plant	F 5.6	30'	@
22	MW-21	F 5.6	15'	N
23-28 UTF	Surface impoundments	F 5.6	~	N to E
~~26~~ 29 UTF				
30-31 UTF	MW-13	F 5.6	12'	E.
31-32	MW-20 Hnu & H_2O levels	F 4	8'	SE
32-35 UTF				
~~35~~-36.	Panorama: Colli facility	F 4	~	S

Weather conditions: overcast, 75°, slight breeze humid. Th 80° by end of ESE

Valda Terawski
8-10-88

10:00 3 Impoundments: water-filled (groundwater seepage)



earth just above water level is black to dk. gray appears to be natural color of silts

MW-13, -21 and -20 bailed / field sampled / etc.

All wells bailed by 10:30 a.m.
Wells were generally bailed dry and allowed to recover prior to sampling.

Bailing order: MW-21, -13, -20, and -22.

Sampling order: MW-22,

MW-22 Darzyn: 1-L amber glass - TOX analyses sample bottle filled with top-opening bailer - 5-6 bailer-fulls needed to fill 1 container. At two bailers, stopped to fill a 250 ml amber glass Bottles were overfilled prior to capping.

Recharging very slowly

10:50 Well recharging poorly - proceed to rotate & sample other wells.

Valda Travis
8-10-88

11:40 MW-21 DTW-8'2"

12:00 Begin sampling MW-13; well recharging rapidly - good opportunity for sample duplicates

Order of collection

	Warzyn
pH	7.2
T	24° C
EC	800 @ 25°

	Warzyn
TOX	X
TOC	
phenols	X
Metals - total	
Metals - dissolved	X
Inorganics	Cl, F, Turbid
	Sulfate
	NO_3, TKN, P

Finished sampling at 12:50
Proceed to MW-21

:45

Start sampling MW-21

1:50-1:51 TOX (4 amber)
1:53 TOC (4 plastic - 4 g)
2:04 metals - total

Warzyn: TOX
phenols
metals

2:25 Began to evacuate MW-20
Only yielded 150 ml. w/ 4+ hours of recharge time. May not be able to sample due to poor well yield.

2:45 Left site for phone calls - came back at 3:45

Valda Travers
8.10.88

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
V. Terauds	Collins Inc. CME	10 / 8 / 88	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: 1L CUBITAINER	Amber BOTTLE	40z plastic BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
AEF05001D	5	1	2			X					MW #13
AEF05012D			1			X					MW 13
AEF05013D			1			X					MW 13
AEF05014D			1			X					MW13
AEF05001	5	1	2			X					MW13
AEF05012		1	1			X					MW13
AEF05013		1	1			X					MW13
AEF05014			1			X					MW13
AEF05011	5	1	2			X					Field Blank
AEF05042		1	1			X					Field Blank
AEF05043		1	1			X					Field Blank
AEF05044		1	1			X					Field Blank

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

1 ICE CHEST(S); OTHER ____

MODE OF SHIPMENT

____ COMMERCIAL CARRIER ____

____ COURIER

X SAMPLER CONVEYED

(SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
D. Lynn Victor ☒ SEALED ☐ UNSEALED	8/11/88	0915	Dick Sweeting ☒ SEALED ☐ UNSEALED	ANALYSIS
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY

7-EPA-9262(Revised 5/85)

ATTACHMENT F

SAMPLE CHAIN OF CUSTODY FORM (WARZYN)

WARZYN

Warzyn Engineering Inc.
O[illegible]ice C[illegible]
University Research [illegible]
P.O. Box 5385
Madison, Wisconsin 53705
(608) 273-0440

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
SAMPLERS: *(Signature)*	

LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS							REMARKS

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*		Date / Time	

Remarks

Distribution: White — Accompanies Shipment; Yellow — Laboratory File; Pink — Coordinator Field Files

NO 8 1428

Photo Log

Roll #2 Frame #	Description	F-stop	Dist.	Direction
1:10 1	MW-22 amidst pallets (upgradient)	4.0	10'	South
0:15 2	MW-5 (dd upgradient)	11	20'	East
0:30 3	MW-22 bailed for sampling	11	10'	South
0:50 4	MW-22 TOX samples	11	6'	South
2:40 5	Millipore filter: MW-13 dissolved metals	4	3'	w/in van
2:15 6	Red staining w/ oil on SE lagoon	8	15'	Southeast
2:20 7	MW-20 evacuating waters for sampling	8	7'	Southeast

Valda Jeavons
8-10-88

Teecon: Curtis Williams (TEG) [H. Gabbert / P. France - Issets out of office]
October 24th next sampling round.
Warzyn plans to stop sampling* once they've obtained all of their parameters – MW-22 (background) they have yet to collect TOC, metals or phenols.
Jacobs will keep dedicated sampling egeiupment and try to obtain as many samples as possible.

* as directed by Warzyn and Collis.

Intend to finish sampling MW-21
(dissolved metals, phenols, inorganics)
Then conduct exit conference to summarize oversight of consultant.
Make arrangements to get back o/in facility.

Issues

- should do quadruplicates: solely TOC/TOX
- filtering TOC/cations/anions is not standard practice according TEGD (* can lose volatile organics)
- field measurements of pH, SC, Temp should be performed at the well head not in a remote location
- Polyethylene bottles for TOC not appropriate
- Bottom discharge bailer recommended for organics to avoid organics sample aeration.
- filter pack volume should be accounted for to calculate purge volumes (use gaged container)
- collect discharge waters/purge waters for routing to treatment plant
- for low-yielding wells, measure pH, T, EC among first samples collected

Valda Trivedi
8-10-88

4:45 Proceed w/ sampling MW-21
collected 1 phenol (as split/equivalent of Warzyn's phenol collected as the well went dry)
also collected a dissolved metals sample
outstanding: 3 Liters of inorganic parameters

5:15 Exit Conference: reviewed issues on page 7
Other issues: access for off-hours data acquisition
copies of field notes, C of C, lab data how

Contacts:

Doug Dahlberg - Warzyn
Dan Deters - Collis

Analytical Lab: Warzyn (see C of C)

Warzyn: Ask at the time for field measurements at time
will not submit raw data at this time or any field logbooks, C of C forms, etc.
Oct 24th contamination indicators is next scheduled sampling round.
Did not indicate willingness to change practices to conform to guidance

Requested access for further sampling to continue data acquisition — o.k.
Will submit chain of custody & receipt form for samples collected. No documents were released by Collis/Warzyn. Valda Travers
8-10-88

suggested that Collis make arrangements to better accomodate an inspection in the future so they may complete their own sampling effort as well as provide the opportunity for split sampling for EPA. Note: burden of Compliance is on the facility.

20:00 Returned to site to sample MW-21 & MW-22

MW-21 collect 1-L cubi for SO_4

Filter pack evident in sample container

20:05 NO_3, TKN, PO_4 from MW-21 ; 1-L cubi

Exhausted well's ability to recharge ; completed sampling.

Moved to MW-22

20:20 Collected TOC (1 4oz container only to preserve volume)

:25 phenol

:35 dissolved metals

:38 total metals (only able to fill 1/2 bottle; acidified & placed on ice. Intend to return & add additional volume ~ midnight).

:40 JEG leaves site to allow wells to recharge

Valda Jeavons
8-10-88

12:00 midnight 8-11-88

12:15 JEG arrives at site ; proceed to sample MW-02

12:18 complete total metals ; add more acid & ice

:22 NO_3, TKN, PO_4, ~~SO4~~ DIT

:35 P, Cl, Turb & SO_4 — incomplete sample volume

:45 JEG left site

Valda Jeavons
8-11-88

5:50 JE6 arrives onsite

6:05 collect remaining SO_4, F, Cl, Turb from MW-22 clean up area; rinse bailers & cord with deionized water & place in plastic bags for Collis to return to Warzyn.

7:10 Doug Smith - Collis
signs sample receipt
obtains copy of C of C
receives sampling equipment & key to wells
JE6 leaves facility

Valora Travers
8-11-88

ATTACHMENT E

RECEIPT OF SAMPLES
CHAIN OF CUSTODY (JACOBS)

RECEIPT FOR SAMPLES AND DOCUMENTS

Inspector(s) Name and Address	Firm Name and Address
ale I. Bates Valda Terawds .S. Environmental Protection Agency Region VII Jacobs Engineering 5 Eunston Road 5201 Central Ave NE Suite 1600 ansas City, Kansas 66115 Albuquerque, NM 87108	Collis, Inc. 2005 South 19th Street Clinton, IA 52732
	Name of Individual Doug Smith
	Title Plant Engineer
te Collected: 8-10 and 8-11-88	Samples were: ( ) Purchased
	☒ Received no charge ( ) Borrowed
mple Numbers see chain of custody MW-13, -21, and -22	Amount paid for Samples
licate Samples Requested ( ) Yes ☒ No	Method of Payment N/A ( ) Cash ( ) Voucher ( ) To be Billed

he documents and samples of chemical substances and/or mixtures described e w were collected in connection with the administration and enforcement f he Resource Conservation and Recovery Act.

ec ipt for the document(s) and/or Sample(s) described below is hereby cknowledged:

Water samples from MW13, MW21 and MW22
Equipment Blank

ture of Owner, Operator, or Agent	Title
Doug R Smith	Plant Engineer
of Inspector / Title	Inspector's Signature
Valda Terawds Hydrologist ~~ale I. Bates Environmental Scientist~~	Valda Terawds

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
V Terauds	Colls Inc. CME	10 / 8 / 88	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: 1L CUBITAINER	Amber BOTTLE	4 oz plastic BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
AEF05009F	5	1	2			X					Eq. Blank
AEF05036F		1	1			X					Eq. Blank
AEF05037F		1	1			X					Eq. Blank
AEF05038F		1	1			X					Eq. Blank
AEF05067	4	1	2			X					MW22
AEF05005	5	1	2			X					MW21
AEF05024		1	1			X					MW21
AEF05025		1	1			X					MW21
AEF05026		1	1			X					MW21

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

1 ICE CHEST(S); OTHER ____

MODE OF SHIPMENT

____ COMMERCIAL CARRIER: ____

____ ~~COURIER~~

X SAMPLER CONVEYED

____ (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
[signature] ☑ SEALED ☐ UNSEALED	8/11/88	0915	[signature] ☑ SEALED ☐ UNSEALED	ANALYSIS
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY ☐ SEALED ☐ UNSEALED	DATE	TIME	RECEIVED BY ☐ SEALED ☐ UNSEALED	REASON FOR CHANGE OF CUSTODY

7-EPA-9262(Revised 5/85)

• TOCs : filtered? & in polyethylene bottles?
(check FEED)

1703 Bill finishes his sample preparation - he will leave behind one cable and two stainless steel bailers for us (JEE) to complete sampling of MW-21 and the upgradient well MW-22.

Exit Conference

- Access for remainder of well evacuation

Issues on previous page covered.

COLLIS CME

Initial Conference: 8:00 a.m. 8-10-88

Doug Smith – Collis, Plant Engineer
Ron Street – Plating foreman
Bill Backus - Warzyn

Larry Phyfe JEG
DeLaine Fletcher JEG
Valda Travnds JEG

- Explained CME process: Audit - done today
  TA - technical evaluation of site hydrology

Focus: observe/document facility's sampling obtain audit measurements & split samples

- Whether or not wells will recover quickly to get enough sample volume. Facility may want to take split as well – (not as important as Warzyns and EPAs) if wells won't produce

- Deep well onsite 1160' deep – process waters for the facility. Will send info w/ other well construction information (MW-20, -21, -22)

- Requested information on well construction be sent to Harry Gebbert, U.S. EPA Region VII. DeLaine provided address

- Suggest facility containerize purged waters in future & add to onsite WWTP rather than dispose of H_2O on the ground.

- Perform general site evaluation in conjunction with pre-sampling activities

Valda Travnds
8.10.88

6:30 Facility Tour / General Site Evaluation - Doug Smith
Noted areas to be cleaned prior to upcoming VSI.

SWMU #1 Drums - waste oil
cleaning chemicals
Area generally untidy - possible storage of incompatibles

SWMU #2 Drums - electroplating
chrome salt - corrosive
paint lacquer & thinner
Salts on floor - other potential spills

Process area: lacquer bath w/ lacquer drums w/in facility

SWMU #3 Drum storage - drums of unknowns + 5 yrs. old.
Chrome recycling
Neutralization bath pH - 8-9
SO_2 treatment - chrome wastes
goes to settling pond/WWTP plant

SWMU #4 Spent acid & cleaner above-grd tanks.

Nitric & hydrochloric acid above-grd tanks

Water treatment area
Filter = Diatomaceous earth.
Settling basin 28' deep 200,000 gal.
Spent filters material run through filter press
then filter is hauled to sanitary landfill.
Only concern is zinc (according to Collin).
Water tested 3x per day at settling tank
filter effluent
discharge to Hfr. Ditch

Site Evaluation concluded 9:25

Karla Nawas
8-10-88

Photo Log

General Site Evaluation Photos

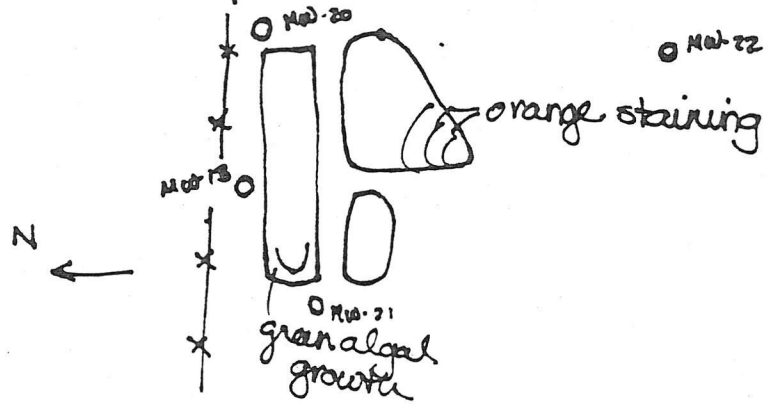
Roll #1

Frame No.	Description	F stop	Distance	Location/Bearing
1-4	Drum storage area	F 1.8	~20'	Inside facility
5	"	"	"	"
6	Waste/trash area	F 11	~	North view
7-9	Choline recycling area	F 4	20'	in facility
10-16	Above-grd storage tanks & water treatment building	F 4	~	S to N.
17-20	Former surface impoundments (grassy area)	F-5.6	~	N to E
21	Settling basin - treatment plant	F 5.6	30'	@
22	MW-21	F 5.6	15'	N
23-28 UTT	Surface impoundments	F 5.6	~	N to E
~~29~~ 29 UTT				
30-31 UTT	MW-13	F 5.6	12'	E.
31-32	MW-20 Hnu & H_2O levels	F 4	8'	SE
32-35 UTT				
35-36	Panorama: Colli facility	F 4	~	S

Weather conditions: overcast, 75°, slight breeze humid. Pk 80° by end of GSE

Valda Terawski
8-10-88

10:00 3 Impoundments: water-filled (groundwater seepage)



earth just above water level is black to dk. gray appears to be natural color of silts

MW-13, -21 and -20 bailed / field sampled / etc.

All wells bailed by 10:30 a.m.
Wells were generally bailed dry and allowed to recover prior to sampling.

Bailing order: MW-21, -13, -20, and -22.

Sampling order: MW-22,

MW-22 Darzyn: 1-L amber glass - TOX analyses sample bottle filled with top-opening bailer - 5-6 bailer-fulls needed to fill 1 container. At two bailers,

Recharging very slowly

10:50 stopped to fill a 250 ml amber glass Bottles were overfilled prior to capping. Well recharging poorly - proceed to rotate & sample other wells.

Valda Travis
8-10-88

11:40 MW-21 DTW-8'2" 1:05

12:00 Begin sampling MW-13 ; well recharging rapidly - good opportunity for sample duplicates

Order of collection

	Warzyn
pH	7.2
T	24° C
EC	800 @ 25°

	Warzyn
TOX	X
TOC	
phenols	X
Metals - total	
Metals - dissolved	X
Inorganics	Cl, F, Turbid
	Sulfate
	NO_3, TKN, P

Finished sampling at 12:50
Proceed to MW-21

:45

Start sampling MW-21

1:50-1:51 TOX (4 amber)
1:53 TOC (4 plastic - 4 g)
2:04 metals - total

Warzyn: TOX
phenols
metals

:55

2:25 Began to evacuate MW-20
Only yielded 150 ml. w/ 4+ hours of recharge time. May not be able to sample due to poor well yield.

2:45 Left site for phone calls - came back at 3:45

Valda Travers
8.10.88

CHAIN OF CUSTODY RECORD
ENVIRONMENTAL PROTECTION AGENCY REGION VII

ACTIVITY LEADER(Print)	NAME OF SURVEY OR ACTIVITY	DATE OF COLLECTION (DAY / MONTH / YEAR)	SHEET
V. Terauds	Collis Inc. CME	10 / 8 / 88	1 of 1

CONTENTS OF SHIPMENT

SAMPLE NUMBER	TYPE OF CONTAINERS: 1L CUBITAINER	Amber BOTTLE	4oz plastic BOTTLE	BOTTLE	VOA SET (2 VIALS EA)	SAMPLED MEDIA: water	soil	sediment	dust	other	RECEIVING LABORATORY REMARKS/OTHER INFORMATION (condition of samples upon receipt, other sample numbers, etc.)
	NUMBERS OF CONTAINERS PER SAMPLE NUMBER										
AEF05001D	5	1	2			X					MW #13
AEF05012D			1			X					MW 13
AEF05013D			1			X					MW 13
AEF05014D			1			X					MW13
AEF05001	5	1	2			X					MW13
AEF05012		1	1			X					MW13
AEF05013		1	1			X					MW13
AEF05014			1			X					MW13
AEF05011	5	1	2			X					Field Blank
AEF05042		1	1			X					Field Blank
AEF05043		1	1			X					Field Blank
AEF05044		1	1			X					Field Blank

DESCRIPTION OF SHIPMENT

____ PIECE(S) CONSISTING OF ____ BOX(ES)

1 ICE CHEST(S); OTHER _____

MODE OF SHIPMENT

____ COMMERCIAL CARRIER _____

____ COURIER

X SAMPLER CONVEYED _____ (SHIPPING DOCUMENT NUMBER)

PERSONNEL CUSTODY RECORD

RELINQUISHED BY (SAMPLER)	DATE	TIME	RECEIVED BY	REASON FOR CHANGE OF CUSTODY
D. Spine-Hotaling [X] SEALED [ ] UNSEALED	8/11/88	0915	Duke SWEETING [X] SEALED [ ] UNSEALED	ANALYSIS
RELINQUISHED BY [ ] SEALED [ ] UNSEALED	DATE	TIME	RECEIVED BY [ ] SEALED [ ] UNSEALED	REASON FOR CHANGE OF CUSTODY
RELINQUISHED BY [ ] SEALED [ ] UNSEALED	DATE	TIME	RECEIVED BY [ ] SEALED [ ] UNSEALED	REASON FOR CHANGE OF CUSTODY

7-EPA-9262(Revised 5/85)

ATTACHMENT F

SAMPLE CHAIN OF CUSTODY FORM (WARZYN)

Warzyn Engineering Inc.
One Science Court
University Research Park
P.O. Box 5385
Madison, Wisconsin 53705
(608) 273-0440

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME

SAMPLERS: *(Signature)*

LAB NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CON-TAINERS							REMARKS

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*		Date / Time	

Remarks

Photo Log

Roll #2 Frame #	Description	F-stop	Dist.	Direction
1:10 1	MW-22 amidst pallets (upgradient)	4.0	10'	South
0:15 2	MW-5 (old upgradient)	11	20'	East
0:30 3	MW-22 bailed for sampling	11	10'	South
0:50 4	MW-22 TOX samples	11	6'	South
2:40 5	Millipore filter: MW-13 dissolved metals	4	3'	w/in van
2:15 6	Red staining w/ oil on SE lagoon	8	15'	southeast
2:20 7	MW-20 evacuating waters for sampling	8	7'	southeast

Valda Jeavons
8-10-88

Teecon: Curri Williams (TEG) [H. Gabbert / P. France - Issues out of office]
October 24th next sampling round.
Warzyn plans to stop sampling* once they've obtained all of their parameters – MW-22 (background) they have yet to collect TOC, metals or phenols.
Jacobs will keep dedicated sampling egeiupment and try to obtain as many samples as possible.

* as directed by Warzyn and Collis.

Intend to finish sampling MW-21
(dissolved metals, phenols, inorganics)
Then conduct exit conference to summarize oversight of consultant.
Make arrangements to get back o/u facility.

Issues

- should do quadruplicates: solely TOC/TOX
- filtering TOC/cations/anions is not standard practice according TEGD * can lose volatile organics)
- field measurements of pH, SC, Temp should be performed at the well head not in a remote location
- Polyethylene bottles for TOC not appropriate
- Bottom discharge bailer recommended for organics to avoid organics sample aeration.
- filter pack volume should be accounted for to calculate purge volumes (use gaged container)
- collect discharge waters, purge waters for routing to treatment plant
- for low-yielding wells, measure pH, T, EC among first samples collected

Valda Jeavons
8-10-88

4:45 Proceed w/ sampling MW-21
collected 1 phenol (as split/equivalent of Warzyn's phenol collected as the well went dry)
also collected a dissolved metals sample
outstanding: 3 Liters of inorganic parameters

5:15 Exit Conference: reviewed issues on page 7
Other issues: access for off-hours data acquisition
copies of field notes, C of C, lab data
how

Contacts:

Doug Dahlberg - Warzyn
Dan Deters - Collis

Analytical Lab: Warzyn (see C of C)

Warzyn: Ask at the time for field measurements at time
Will not submit raw data at this time or any field logbooks, C of C forms, etc.
Oct 24th contamination indicators is next scheduled sampling round.
Did not indicate willingness to change practices to conform to guidance

Requested access for further sampling to continue data acquisition — o.k.
Will submit chain of custody & receipt form for samples collected. No documents were released by Collis/Warzyn.

Valda Travers
8-10-88

suggested that Collis make arrangements to better accomodate an inspection in the future so they may complete their own sampling effort as well as provide the opportunity for split sampling for EPA. Note: burden of Compliance is on the facility.

20:00 Returned to site to sample MW-21 & MW-22

MW-21 collect 1-L cubi for SO_4

Filter pack evident in sample container

20:05 NO_3, TKN, PO_4 from MW-21 ; 1-L cubi

Exhausted well's ability to recharge ; completed samping.

Moved to MW-22

20:20 Collected TOC (1 4oz container only to preserve volume)

:25 phenol

:35 dissolved metals

:38 total metals (only able to fill 1/2 bottle; acidified & placed on ice. Intend to return & add additional volume ~ midnight).

:40 JEG leaves site to allow wells to recharge

Valda Jeavons
8-10-88

12:00 midnight 8-11-88

12:15 JEG arrives at site ; proceed to sample MW-22

12:18 complete total metals ; add more acid & ice

:22 NO_3, TKN, PO_4, ~~SO_4~~ VFT

:35 F, Cl, Turb & SO_4 — incomplete sample volume

:45 JEG left site

Valda Jeavons
8-11-88

5:50 JE6 arrives onsite

6:05 collect remaining SO_4, F, Cl, Turb from HW-22
clean up area; rinse bailers & cord with deionized water & place in plastic bags for Collis to return to Warzyn.

7:10 Doug Smith - Collis
signs sample receipt
obtains copy of C of C
receives sampling equipment & key to wells
JE6 leaves facility

Valda Jeavons
8-11-88

ATTACHMENT E

RECEIPT OF SAMPLES
CHAIN OF CUSTODY (JACOBS)

RECEIPT FOR SAMPLES AND DOCUMENTS

Inspector(s) Name and Address	Firm Name and Address
ale I. Bates Valda Teravds .S. Environmental Protection Agency Region VII Jacobs Engineering 75 Eunston Road 5201 Central Ave NE ansas City, Kansas 66115 Suite 1600 Albuquerque, NM 87108	Collis, Inc. 2005 South 19th Street Clinton, IA 52732
	Name of Individual Doug Smith
	Title Plant Engineer
te Collected: 8-10 and 8-11-88	Samples were: ( ) Purchased
	☒ Received no charge ( ) Borrowed
ple Numbers see chain of custody MW-13, -21, and -22	Amount paid for Samples
licate Samples Requested: ( ) Yes ☒ No	Method of Payment: N/A ( ) Cash ( ) Voucher ( ) To be Billed

e documents and samples of chemical substances and/or mixtures described w were collected in connection with the administration and enforcement he Resource Conservation and Recovery Act.

ceipt for the document(s) and/or Sample(s) described below is hereby knowledged:

Water samples from MW13, MW21 and MW22

Equipment Blank

ture of Owner, Operator, or Agent	Title
Doug R Smith	Plant Engineer
me of Inspector / Title	Inspector's Signature
Valda Teravds Hydrologist ~~Dale I. Bates Environmental Scientist~~	Valda Teravds